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PIT AND QUARRY

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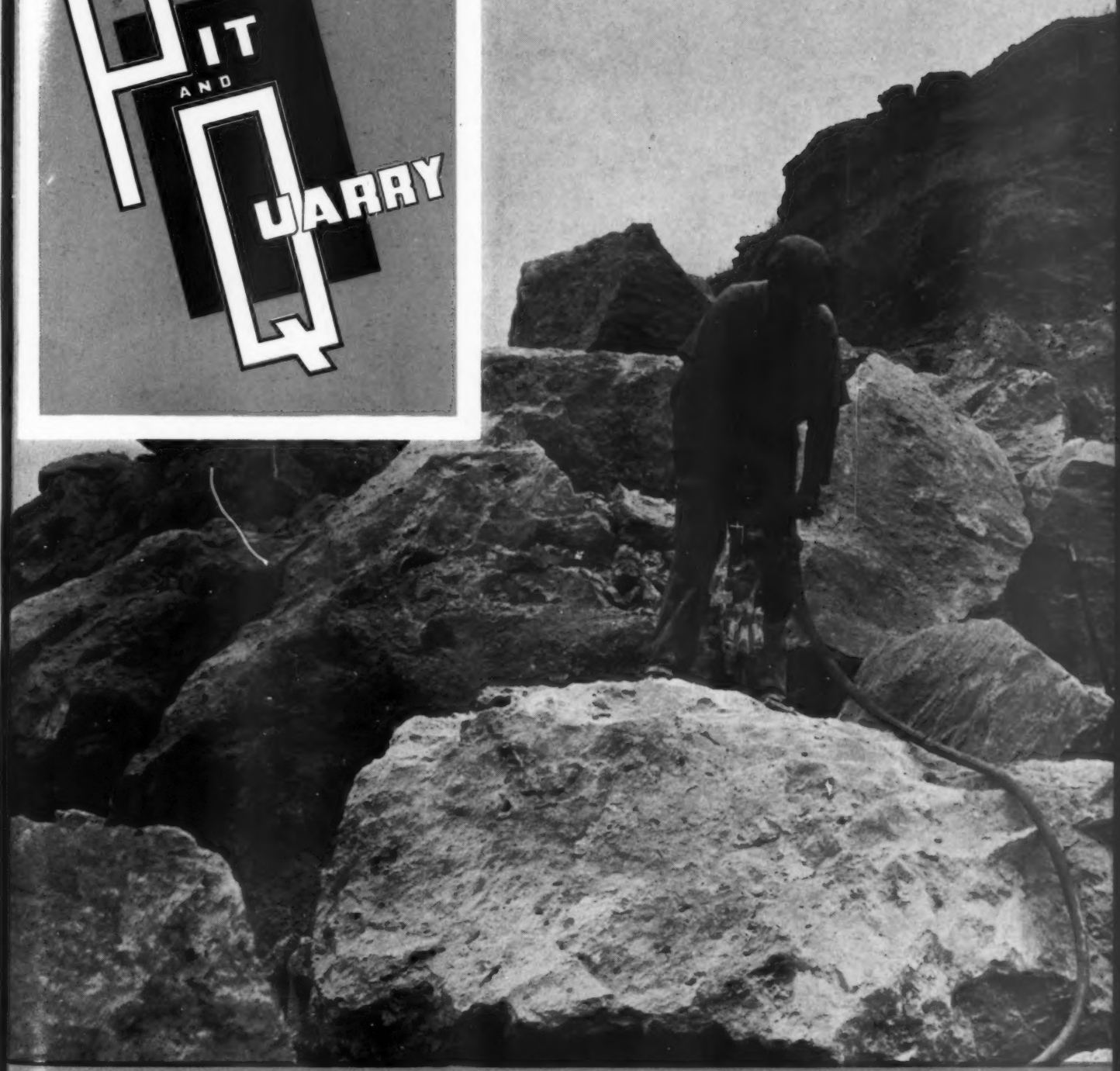

Drilling for Secondary Blasting in a Limestone Quarry

In this Issue

Reports on Natl. S.& G. Assn., Agr. Lst. Institute, A.I.M.E., Natl. R.M.C. Assn., and Amer. Conc. Institute Conventions

Plants of Diamond Portland Cement Co. and Lambert Bros.

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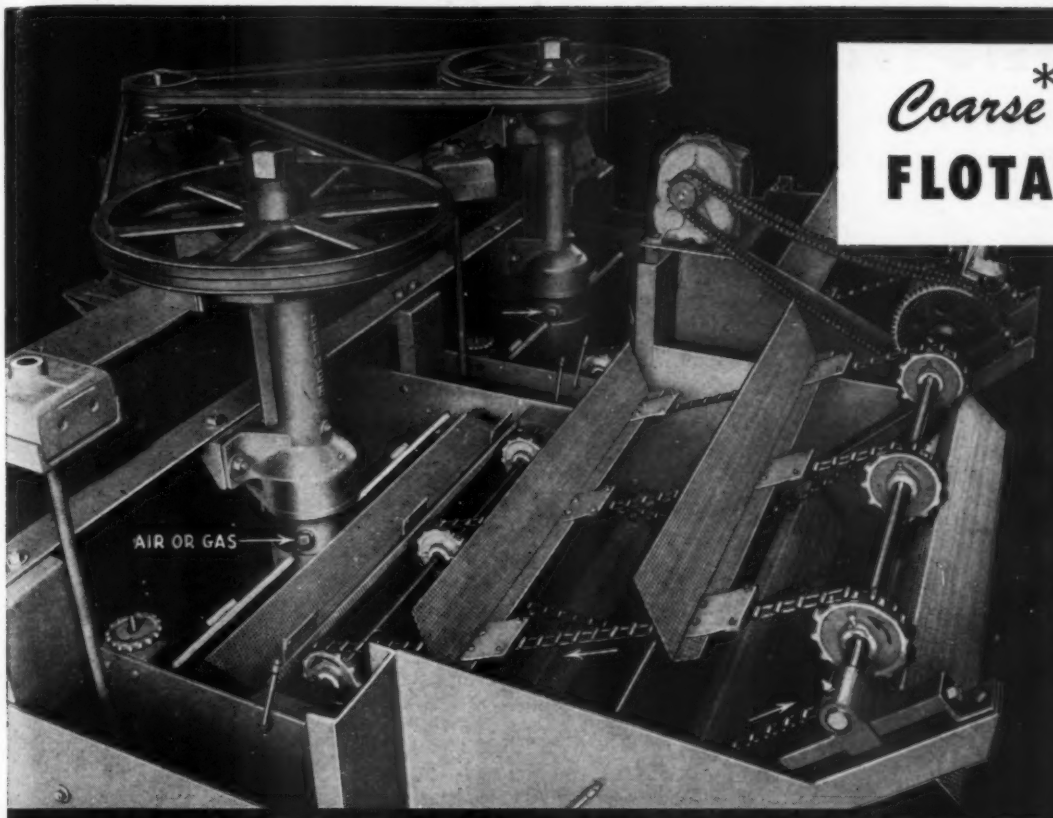

*Coarse** COAL FLOTATION

Working directly with the Bureau of Mines Coal Preparation Section, and with large coal companies engaged in solving the problem, Denver Flotation Engineers designed a Flotation Machine which does an effective job of coal cleaning as will be noted in the tabulations below from Bureau of Mines Report of Investigations 4306, July 1948.

Marketable results are obtained on varying types, grades and sizes of coal fractions.

with DENVER "SUB-A" FLOTATION MACHINES

PROBLEM • Treating coal fractions from 1/16"-0. Two objectives are sought—

1) *to save marketable grade of coal in these sizes and*

2) *eliminate stream pollution from wasted slurry water.*

These coal fractions cannot be satisfactorily cleaned by "gravity" methods. With flotation remaining as the most acceptable solution, a prime consideration is that the flotation machine used must be capable of handling both coarse and fine sizes effectively. The rapid rising, dense agglomerate type "matte" coal concentrate must be removed and dewatered in large volume.

SOLUTION • No commercial flotation machine can treat both coarse and fine sizes so effectively as the Denver "Sub-A." This selective feature plus its extreme mechanical and metallurgical flexibility makes it the logical choice for coal cleaning work.

Removal and dewatering of the dense agglomerated "matte" concentrate was accomplished with special "deep-digging" punched plate rakes which carry the 7"-8" coal matte up the spitzkasten allowing surplus water to drain back in the pulp through the perforated rakes. Further dewatering is carried out in a wedge bar compression screw conveyor. Surplus water returns via middling feed pipe to the Denver "Sub-A" Flotation cell for re-use, thus eliminating surplus slurry water.

	SCREEN SIZE, MESH	FEED		CLEANED COAL		REFUSE		DISTRIBUTION, %		Reagents, lbs. per ton feed
		Weight, percent	Ash, 1* percent	Weight, percent	Ash, 1* percent	Weight, percent	Ash, 1* percent	Cleaned Coal	Refuse	
MINE I *	10 to 14	18.8	11.9	23.0	6.2	9.1	31.6	77.6	22.4	Kerosene, 3.27
	14 to 35	51.4	19.1	56.0	7.6	31.9	65.3	80.1	19.9	B-23 Frother, 0.24
	35 to 100	23.3	40.3	17.0	13.4	35.6	81.8	60.7	39.3	Pine Oil, 0.11
	Through 100	6.5	58.3	4.0	19.3	23.4	84.0	39.7	60.3	
	Composite through 10	100.0	25.2	100.0	8.7	100.0	72.5	74.1	25.9	
MINE II *	10 to 35	64.2	10.5	58.2	3.4	54.0	50.7	85.0	15.0	Kerosene, 3.46
	35 to 100	22.6	10.5	26.9	4.6	22.2	66.2	90.4	9.6	B-23 Frother, 0.26
	Through 100	13.2	12.8	14.9	6.3	23.8	64.8	88.9	11.1	Pine Oil, 0.20
	Composite through 10	100.0	10.8	100.0	4.2	100.0	57.5	87.6	12.4	

1*—Moisture free basis

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Vol. 41 APRIL 1949 No. 10

PIT AND QUARRY

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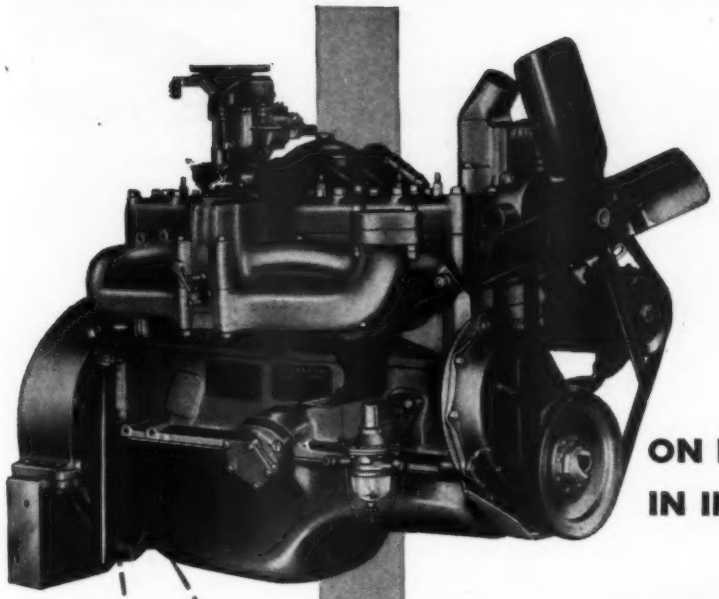

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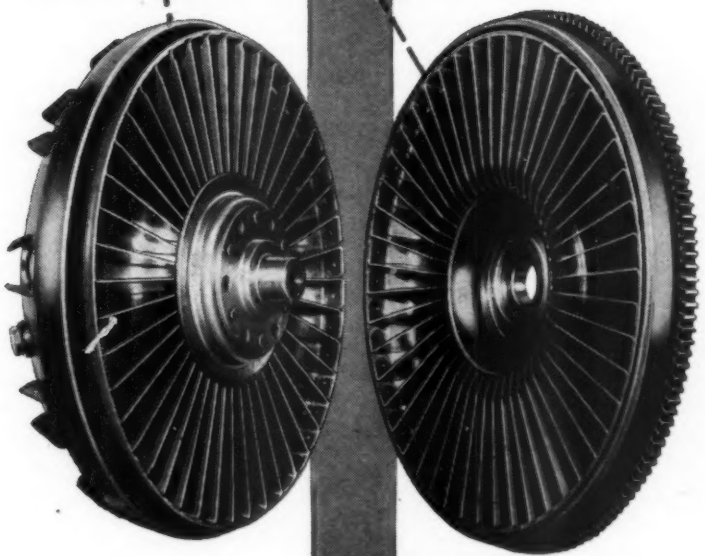

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editorial

Let's Sell Highways

JUST a year ago on this page a plea was made for the abandonment of old concepts with respect to our highways and for a unified nation-wide highway construction program which would bring our roads up to a standard commensurate with our standing as a nation, our national income and our needs. Our then inadequate highway system is no better now. The new highways built and the old ones improved in 1948 make an impressive total except when compared to the total mileage of roads and their deterioration in that year.

By any method of comparison the inevitable conclusion is reached that our present highway system and our present construction programs are inadequate, and that we must revise sharply upward our present ideas about expenditures for highways. A year ago we used as an example the authoritative statement that in one state alone it would cost more than 500 million dollars to bring the roads up to standard. At the present rate of expenditures in that state, it would take 20 years to do the job, provided that no additional deterioration took place in the meantime.

According to a recent statement by Charles M. Upham, engineer-director of the American Road Builders' Association, the situation is even worse nationally. According to authoritative and conservative estimates, it would cost 60 billion dollars to build our highways to meet the transportation needs of today and tomorrow. The 1948 expenditure of 1.8 billion dollars on our highway construction program seems large, but when the conditions surrounding the expenditures are analyzed, it dwarfs into a fraction of what should be spent. In 1948, said Mr. Upham, we spent for highway construction at the rate of only $12 for every man, woman and child in the nation, much less than the annual benefits derived by each of us from our highway system. He pointed out that expenditures in 1948 were just a little greater than in 1930, even though our national income was five times greater, our population had increased 25 million, and the volume of traffic had increased tremendously. There has also, he pointed out, been an even greater increase in the ton-mileage because of the rapidly increasing ratio of trucks and buses to passenger cars.

Mr. Upham also recommends that federal aid authorization be increased to at least 1 billion dollars annually to assist the states in doing much-needed work. Such an authorization would be double the highest previous amount authorized under the Federal Aid Highway Act of 1944. This sum would provide a needed impetus to construction, now that other deterrents no longer exist. Due to the increased number of vehicles and of traffic, and to increased gasoline tax and vehicle tax rates in many states, every state is getting more revenue with which to match federal funds. The stabilization of construction costs is removing the reluctance of states to authorize road expenditures and of contractors to bid on road projects.

THE American Road Builders' Assn., through Mr. Upham and others, the various aggregate, cement and asphalt producers' associations, the trade and engineering publications directly or indirectly interested, the U. S. Bureau of Public Roads, the Federal Works Agency, and others have done a thorough and consistent job of selling the need for more and better highways. Apparently, due in part at least to these efforts, our congressmen, federal and state officials, highway engineers, contractors, producers, etc., are sold on an expanded highway program.

That would have been enough in pre-war Germany, or in many other countries, to insure the construction of an adequate highway system. In this country, however, the very democratic system of government which makes it great is often the biggest obstacle to progress. The public apparently, is not sold on the need for greater highway expenditures, and few state and local officials and politicians, or even those at higher levels, have the temerity to suggest such increases.

THE only answer seems to be for those most directly interested in the construction of highways to make some effort in this direction. Every producer or manufacturer of highway building materials—and this includes sand and gravel, crushed stone, slag, cement, bituminized aggregates and ready-mixed concrete—should look upon it as his personal mission to sell the people in his territory on the vital need for better roads and on the soundness of such an investment. He should begin by selling his own employees, who would then individually become workers for this cause.

Canada Sets An Example

At a time when information from Washington seems to indicate that we may be faced with increased governmental expenditures and increased taxes, in spite of a sharp leveling off or downward trend in production and prices, news comes from Canada which arouses our envy if not our admiration. On March 22 Finance Minister Douglas Abbott handed Canadians the biggest tax-slashing budget in the history of that country, or perhaps of any other country. If approved by parliament, and there seems to be no doubt that it will be, this budget would reduce taxes nearly 400 million dollars per year. It would remove about 750,000 present taxpayers from the tax rolls, reduce income taxes an average of 32 percent, take excise taxes off one group of commodities and reduce them on another, and scale down corporate taxes on small businesses. Just how this reduced income will affect Canada's highway construction and other vital works and its contribution to "world recovery" is not yet known.

In presenting this budget Mr. Abbott stated that Canada's "almost unexcelled prosperity" will continue at least another year. Post-war inflation, he said, seems to be at an end, and "prices have begun to recede to more healthy levels."

Walter E. Trautfer

news of the industry

PIT AND QUARRY

Eminent Speakers Secured For N.L.A. Convention At Hot Springs, May 5-7

The 47th annual meeting of the Lime Industry and the 31st annual convention of the National Lime Association are scheduled for May 5 to 7 at The Homestead, Hot Springs, Va. As has been the practice for the last few years, the convention is open to association members and invited guests only.

In addition to a diversified program representing outstanding speakers in the various fields, the convention will offer social activities, particularly for the ladies. There will be a combined reception and banquet, with special entertainment.

Speakers tentatively scheduled to appear on the convention program include Robert S. Boynton, general manager, N.L.A.; Abram Myers, N.L.A. legal counsel; George D. Scarseth, director of research, American Farm Research Association; C. J. Lewis, technical director, The Warner Company; Bernard E. Gray, general manager and chief engineer, Asphalt Institute; Melvin H. Baker, president, National Gypsum Company; Dr. John Thornton, architectural engineer, Detroit-Edison Company; Dr. F. G. Merkle, professor of soil technology, Pennsylvania State College; Professor K. B. Woods, department of highway engineering, Purdue University; Dr. Willem Rudolfs, department of water supply and sewage disposal, Rutgers University; Professor James A. Murray, associate professor of materials, Massachusetts Institute of Technology; Professor Walter C. Voss, head of department of building engineering and construction, Massachussets Institute of Technology.

H. E. Battin Jr. President Of N. Y. Crushed Stone Assn.

The following officers were elected at the annual meeting of the New York State Crushed Stone Association, Inc., held at Albany on March 9:

President, Harry E. Battin Jr., Callanan Road Improvement Co., South Bethlehem; vice-president, Hiram W. Barnes, Dolomite Products Corp., Rochester; treasurer, H. E. Rainer, Federal Crushed Stone Corp., Buffalo.

Directors chosen included the following: Milo Crouse, Buffalo Crushed Stone Corp., Buffalo; Clarence A. Munz, Eastern Rock Products, Inc., Utica; John Rice Jr., General Crushed Stone Co., Easton, Pa.; Wilson P. Foss III, New York Trap Rock Corp., New York; William H. Peckham, Catskill Mountain Corp., White Plains; Myron J. Wurtenberger, Frontier Stone Products, Inc., Lockport; and Irving K. Cox, Allis-Chalmers Mfg. Co., New York.

New England Operators Form Mining Organization

Quarry and mine operators of New England recently moved to form an organization for aiding the development and utilization of mineral resources in their area and in New York state.

The new organization will be known as the Northeastern Mining Association. It is headed by George Adams Ellis of Vermont, president of a copper company.

Coming Events

April 21-22, 1949—Chicago. Annual convention, Wabash Valley Ready-Mixed Concrete Association, Stevens Hotel.

May 5-7, 1949—Hot Springs. Annual convention, National Lime Association, The Homestead.

May 11-13, 1949—Hot Springs. Annual meeting, National Industrial Sand Association, The Homestead.

June 27-July 1, 1949—Atlantic City. Fifty-second annual meeting, American Society for Testing Materials, Hotel Chalfonte-Haddon Hall.

National Slag Association Safety Competition To Begin April 1, 1949

The National Slag Association, Earle Building, Washington, D. C., announces the N.S.A. Safety Competition, for which all slag-processing plants in the United States are eligible. This contest will be conducted by the U. S. Bureau of Mines. The contest period is April 1 to March 31. Two bronze plaques, to be known as the PIT AND QUARRY Trophies, and to be presented by this publication, will be awarded to the plants having the best safety records in each of two groups. One award is for plants working 60,000 or more man-hours during the year and the other for those working less than 60,000 man-hours. A company may select one or more of its plants for entry in the contest, but a separate enrollment application should be filed for each plant. Applications and copies of the rules may be obtained by writing to Forest T. Moyer, chief, Accident Analysis Branch, Bureau of Mines, U. S. Department of the Interior, Washington 25, D. C. Prompt action is advised as the contest begins April 1, 1949.

The contest covers lost-time or disabling injuries and man-hours worked by all employees at the plant who are employed by the same company, and includes work up to point of delivery of the material directly to the consumer or to an independent agency of transportation; in other words, to the point of relinquishment of control of the material by the producer.

The winners will be the plants having the lowest injury-severity rates in each of two groups; that is, the smallest loss of time from all fatal, permanent, and other lost-time injuries per 1,000 man-hours worked. Should two or more plants in each group have no injuries causing loss of time, the trophies shall be awarded the plant in each group with the largest number of man-hours of exposure during the year.

Illinois ranks third among the states of the Union in both amount and value of limestone produced annually. Limestone quarries in the state supply about 90 percent of the stone used in Illinois.

A.G.C.'s Foreman Predicts $18,750,000,000 Volume Of Construction in 1949

The construction industry should be able to execute a larger volume of work faster and more efficiently during 1949 than in any year since the end of the war, Managing Director H. E. Foreman stated recently in his annual report to the 30th anniversary convention of The Associated General Contractors of America at the Waldorf-Astoria Hotel.

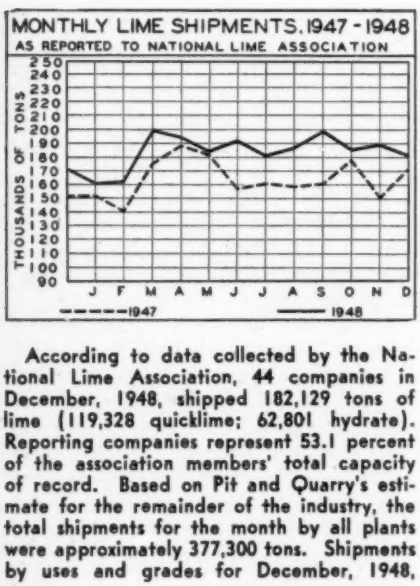
With the expectation of more adequate materials and equipment, more skilled workmen, more competition, and no major upsets to the national economy, he declared that there was every reason to believe that this could be accomplished.

He reported that there were the potentials for a record-breaking volume of $18,750,000,000 in new construction and an additional $6,000,000,000 in maintenance and repair operations during the year.

Koppers Company Acquires Sweeney Plant and Equipment

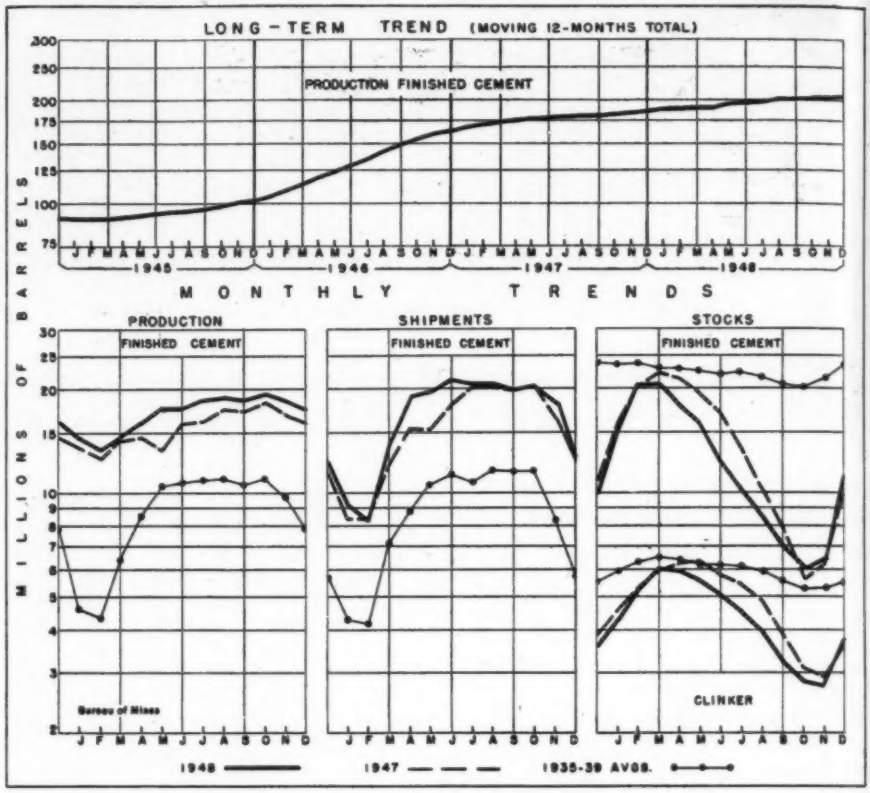
Officials of Koppers Company Inc. of Pittsburgh, Pa., have announced purchase of the plant and equipment of the Michael E. Sweeney Corporation of Rochester, N. Y., largest manufacturer and distributor of pre-mixed road materials in this area. J. N. Forker, vice-president and general manager of Koppers' tar products division, said the plant becomes the 23rd operated by that division and the third in New York.

Michael E. Sweeney, who will be plant manager for Koppers, said the purchase will provide an additional line of products for the unit here and result in expanding operations.



According to data collected by the National Lime Association, 44 companies in December, 1948, shipped 182,129 tons of lime (119,328 quicklime; 62,801 hydrate). Reporting companies represent 53.1 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments for the month by all plants were approximately 377,300 tons. Shipments by uses and grades for December, 1948, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	298	5,346
Building	13,628	32,238
Chemical	105,402	25,217
Totals	119,328	62,801



SUMMARY—The portland cement industry produced 17,425,000 barrels of finished cement in December, 1948, as reported to the U. S. Bureau of Mines. This figure represents an increase of 3 percent over the production reported for December, 1947. Mill shipments totaled 12,741,000 barrels, an increase of 3 percent over the December, 1947, figure, while stocks of 11,083,000 barrels on December 31 were 11 percent above the December, 1947, totals. Clinker output in December, 1948, amounted to 18,624,000 barrels, representing an increase of 9 percent over the corresponding month of the previous year.

PRODUCTION—The output of 17,425,000 barrels of finished cement in December, 1948, came from 147 plants located in 35 states and Puerto Rico. In the same month of 1947, 16,123,000 barrels were produced in 147 plants. Clinker production increased 9 percent over the December, 1947, figure.

SHIPMENTS—Mill shipments of 12,741,000 barrels increased 3 percent over the December, 1947, figure. The demand for cement in December, 1948, as indicated by mill shipments, decreased from that of the previous month (November, 1948)—18,110,000 barrels. Shipments were higher in 14 districts and lower in 5, than those reported in December, 1947. The changes range from a decrease of 16 percent in the California district to an increase of 27 percent in the Iowa district. An increase of 15 percent is also indicated for the Puerto Rican district for December, 1948.

STOCKS—Stocks of 11,083,000 barrels of finished cement on December 31 were 11 percent above the December, 1947, figure, while clinker stocks, as of the same date, amounted to 3,781,000 barrels—an increase of 5 percent.

ANNUAL SUMMARY FOR 1948—Production of portland cement in 1948 reached 205,424,000 barrels, an increase of 10 percent above the previous year's total and a new all-time high for the industry. Production by districts for 1948 was higher than that reported for 1947 in all districts, ranging from 4 percent for the Illinois and Alabama districts to 19 percent for the Colorado-Wyoming-Montana-Utah-Idaho district. Clinker output in 1948 amounted to 207,545,000 barrels, an increase of 11 percent over the 1947 figure. Shipments reached 204,329,000 barrels, representing a 9 percent increase over the 1947 total, as well as an all-time high.

$28,000,000 Road Bond Issue Authorized for Arkansas

Issuance of $28,000,000 in highway bonds was authorized by Arkansas voters at a special election on February 15. Revenue from the bonds will be used to aid in financing an $80,000,000 highway construction program suggested for the next four years by Governor Sid McMath. The remainder of the funds will come from anticipated regular state highway revenue and federal matching funds.

The proposal submitted to the electorate by the state legislature stipulated that the bonds would be floated in four annual issues not to exceed $7,000,000 each, rather than in one lump issue. Maximum interest on the bonds was set by the legislature at 3.2 percent.

Norman Hamm of Perry, Kan., has purchased the Wheeler Limestone Company's quarry at Williamstown, Kan., at an estimated price of $80,000. Mr. Hamm will produce various kinds of crushed rock, as well as agricultural limestone which will meet government specifications.

Dodge Report Reveals Building and Engineering Contract Volume Lower

The volume of contracts awarded for building and heavy engineering works in February in the 37 states east of the Rocky Mountains continued lower than last year despite a marked improvement over January's record, according to the F. W. Dodge Corporation.

Projects classified as publicly-owned figured heavily in the awards of the first two months of this year. In fact, 39 cents out of every dollar for which contract commitments were reported in the first two months were for publicly-owned projects and covered 31 percent of all nonresidential work, 16 percent of residential work and 86 percent of heavy engineering awards. Government work rose to 44 percent of the total of all awards in February.

Investment commitments for building projects and engineering construction in February in the area east of the Rockies totaled $568,467,000. This total represented an increase of 18 percent over January, but a drop of 17 percent from February, 1948, and brought the cumulative total for the first two months of this year to $1,051,451,000, or 19 percent less than for the corresponding period of last year.

At the close of last month, nonresidential contract volume was down 13 percent from the first two months of last year, residential awards were down 25 percent, and heavy engineering work was off 19 percent, according to an analysis of contracts by the Dodge organization.

Exceptions to the downward movement were reported in public building, up 23 percent; religious building, up 27 percent; and social and recreational building, up 14 percent. Single-family houses built to owners' orders for their own occupancy were reported up 9 percent over the first two months of last year. Public utilities construction contracts were reported up 3 percent during the first two months.

While the building movement appeared downward in the area east of the Rockies as a whole, there were exceptions. New England showed an 8 percent increase over the first two months of last year, attributable to gains in both residential and nonresidential building. Northern and eastern Ohio witnessed a moderate gain of 3 percent over the two-month period, substantial increases in heavy engineering awards offsetting a sharp drop in residential building volume. An unusually heavy volume of engineering projects in Minnesota, North Dakota, and South Dakota brought the contract total of all awards in the first two months to a level almost double that reported for the corresponding period of last year.

$700,000 Universal Atlas Bid Accepted for Bull Shoals Dam

The Universal Atlas Cement Company's $700,000 bid to supply 200,000 barrels of cement for the Bull Shoals Dam, only offer submitted on the United States Engineers project, has been accepted. Delivery under the new contract, stated Lt. Col. Kenneth Newton, executive officer, was scheduled for April 1.

At Bull Shoals, pouring of concrete was resumed after an interruption of several weeks due to a fire which destroyed a portion of the cement batching plant.

103-Mile Conveyor System To Connect L. Erie and Ohio R.

Formation of a new corporation, the Riverlake Belt Conveyor Lines, Inc., to build a $210,000,000 overland belt conveyor transportation system between Lake Erie and the Ohio River, has been announced by H. B. Stewart Jr., president of the Akron, Canton and Youngstown Railroad. Mr. Stewart asserted that the system would save from $20,000,000 to $45,000,000 annually in freight rates on materials such as limestone, ore, etc.

The main line will be a two-way belt extending for 103 miles from Lorain on Lake Erie to a terminal on the Ohio River near East Liverpool. Spur lines would serve Youngstown and Cleveland, comprising a total of 130 miles.

Olympic Portland Cement Co. Gets 100,000-Bbl. Contract

Olympic Portland Cement Company of Seattle, Wash., has been awarded a contract for 100,000 bbls. of cement by the U. S. Army Engineers, to be shipped to Alaska.

It is anticipated that about six months will be required to complete the contract. Stockpiling of the initial consignment began immediately at Bellingham municipal docks.

North Dakota Legislature Grants $25,000 for Survey On Cement Plant Issue

North Dakota's legislature on March 3 enacted a bill providing $25,000 for a study by the state research foundation as to the feasibility of the state cement manufacturing business. The measure awaited only the signature of Gov. Fred G. Aandahl to become law.

If the study results in favorable findings, the state industrial commission may go to the electorate with a request for a $5,000,000 bond issue to finance a state cement plant.

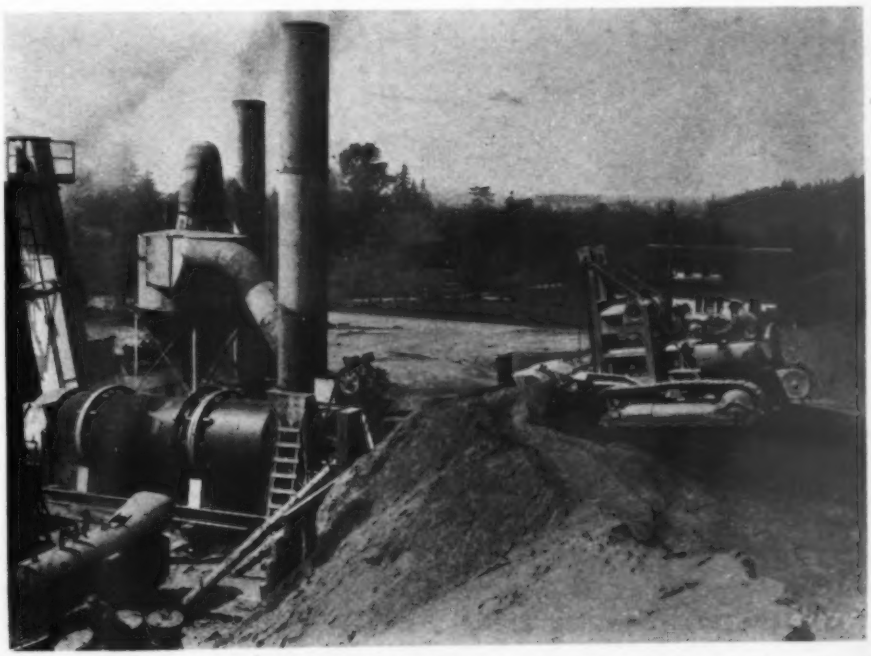
State and Federal Labor Legislation Digest Issued

Workmen's compensation and child labor legislation held the limelight during 1948, when ten states and Puerto Rico met in regular legislative sessions, according to the *Annual Digest of State and Federal Labor Legislation*, which was recently issued by the Bureau of Labor Standards, U. S. Department of Labor. Several states held special sessions, but no labor legislation was enacted.

Most significant was the passage of a workmen's compensation law in Mississippi, with the result that every state in the Union now has such a law. Existing workmen's laws of Kentucky and Virginia were revised and standards for the employment of children were raised.

Copies of the bulletin (No. 101) may be obtained without cost upon application to William L. Connolly, director, Bureau of Labor Standards, U. S. Department of Labor, Washington 25, D C.

It is reported that Japanese farmers soon will receive fertilizer made from potash produced in the Soviet zone of Germany.



• At the plant of the C. V. Wilder Company near Mt. Vernon, Wash., a "Caterpillar" diesel D4 tractor, teamed with a Trackson Traxcavator, hauls and feeds gravel to the firm's asphalt plant. Capacity of the plant is 500 tons per day.

Huron Portland Cement Honors Old-Timers at Superintendents' Meeting

Plant superintendents and "quarter century" employees converged on the world's largest cement mill at Alpena, Mich., for the annual watch presentation ceremony and superintendents' convention on March 15, 16 and 17.

Representatives from each of the Huron Portland Cement Company's 12 plants were present for the three-day program. High on the list of activities was the inspection by the plant superintendents of the additional facilities which have been installed. The newly completed multi-million-dollar expansion program at Huron has resulted in making it the largest single cement mill in the world. The tremendous new mill capacity and plant operating problems were discussed following the plant inspection.

Highlight of this year's gathering was the presentation of gold watches by Emory M. Ford, president of the Huron Portland Cement Company and of the Wyandotte Chemicals Company, to employees who completed their 25th year with Huron during 1948.

These presentations brought to 195 the number of watches given to Alpena mill employees alone. Huron points with pride to the fact that in these days of large labor turnover and shifting population, more than 19 percent of the present active employees at the Alpena mill have been with the company more than 25 years. Eleven men still in active service have been with Huron for more than 40 years.

A.G.C. Names Teichert, Couse To Top Offices at New York

Election and installation of officers for the current year were among the important events of the 30th annual convention of The Associated General Contractors of America held recently at New York. New A.G.C. president is Adolph Teichert Jr., president of A. Teichert & Son, Inc., Sacramento, Calif. Assisting him in directing the organization's activities will be Walter L. Couse, vice-president, of Walter L. Couse & Co., Detroit, Mich.

Among the newly-elected directors are Albert D. Blakeslee of C. W. Blakeslee & Sons, Inc., New Haven, Conn., and Edward O. Earl of the San Xavier Rock & Sand Company, Tucson, Ariz.

Federal and Lehigh Officials Expect Continuing Demand

Two cement producing plants in Buffalo, N. Y.—Federal Portland and Lehigh Portland—refuse to take seriously a recent seasonal easing in orders. In fact, they almost welcome the letup. It's giving them a chance to build up a little reserve supply for the spring rush they are confident will develop.

Both Federal Portland and Lehigh Portland are producing at a record clip. All production facilities are being operated 24 hours a day, seven days a week. Executives of these firms believe their plants will run near capacity levels all through 1949.

Calaveras Cement Sponsors Safety Essay Competition

A safety essay contest for high school and grammar school students in the vicinity of its plant in Calaveras County, Calif., has been announced by the Calaveras Cement Company. The concern will award a series of cash prizes for the best essays written on any phase of accident prevention during a ten-day period commencing March 21.

Calaveras officials believe that the enthusiasm of competing students will be carried home to adult members of their families, effectively spreading a safety message throughout the entire community. Contest entries will be judged by a panel of prominent local citizens.

The Wyoming Vermiculite Company, which was formed last year to process vermiculite for insulation purposes in the Encampment, Wyo., area, has launched a $100,000 improvement project of its milling facilities, to be completed early in 1949.

• Newly-elected officers of the A.G.C.A. (left to right): H. E. Foreman, Washington, D. C., managing director; Adolph Teichert Jr., A. Teichert & Son, Sacramento, Calif., president; D. W. Winkelman, D. W. Winkelman Co., Syracuse, N. Y., retiring president; and W. L. Couse, Walter L. Couse & Co., Detroit, Mich., vice-president.

Annual 1948 Reports Of Cement Firms Show Higher Output and Profits

Reports of leading cement manufacturing firms indicate unequivocally a continuing upward ternd in production, sales and earnings. The 51st annual report of the Lawrence Portland Cement Company reveals that 1948 was one of the most successful years in the firm's history. Net sales for the 12-month period ended on December 31 totaled $7,342,137, an increase of $2,047,266 over the total for 1947. Net income, after taxes, was $718,652, as compared with $345,203 for the previous year.

Lehigh Portland Cement Company sales in 1948 approximated $38,000,000, a new all-time high, and a 27 percent increase over sales in 1947. During 1948 Lehigh spent approximately $34,000,000 for improvements, and further expansion this year will increase the firm's productive capacity by 1,000,000 bbls. annually. Capital expenditures scheduled for 1949 will be between $6,000,000 and $8,000,000.

Lone Star's 1948 sales reached $54,588,666, as against $46,970,652 in 1947. Net profit figures looked like this—1948, $7,618,637; 1947, $6,337,424.

Pennsylvania-Dixie and its wholly-owned subsidiaries reported net sales for 1948 to be $18,493,625; net sales in 1947 were $14,920,177. Profits, after taxes, amounted to $2,696,827 for 1948; in 1947 net profit was $1,534,289.

Missouri Portland's net income of $1,163,477 beat the 1947 figure by $520,242. Modernization projects initiated in 1945 will be completed during 1949, according to M. Moss Alexander, president. Calaveras Cement Company sales during 1948 reached $4,325,113, as compared with $2,966,540 in the preceding year. A net profit of $1,608,262 was reported by the Riverside Cement Company of San Francisco in 1948. In the preceding year the figure was $1,046,415.

For 1948, Medusa Portland Cement Company reported a net profit of $1,088,291 on record net sales of $13,156,214, as against $858,113 on sales of $11,418,712 in 1947.

Louisville Cement Co. Honors 124 for Long Service Records

Old-timers of the Louisville Cement Company, a 119-year-old firm which is one of the oldest of Louisville's industries, were honored recently for their years of service. Total of years spent in the employ of the company by 124 workers was 4,737 years. Awards were made at Louisville, Speed, Ind., and Milltown, Ind.

Two employees, H. Warner Overly and Harry E. Regan Sr., had put in 61 years each. Among the 50-year veterans was William S. Speed, chairman of the board, who has been with the concern for 53 years. All employees who have records for 50 years' service or more received gold watches.

Road Builders Approve Continuation of Highway Aid at $1 Billion Annually

At the conference and 46th annual meeting of the American Road Builders' Association held in Washington, D. C., on February 7, 8 and 9, members went on record as favoring the continuation of federal aid for highway construction at an annual rate of not less than $1,000,000,000 a year. The organization passed 9 other resolutions, as follows:

Approval of the contract method for all construction; opposition to any procedure making the right of employment contingent upon membership in any organization; an appeal to the Federal Communications Commission to allocate radio frequencies for highway radio service; recommendation of a 60-cent-an-hour minimum wage; petitions to the Congress to amend the federal airport act and authorize the Civil Aeronautics Administration to make grants not over 5 percent of the total allocated to federal aid airport projects, to be used for engineering surveys and plans for future construction; recommendation of an engineering analysis of highway problems in every state; opposition to any federal reorganization plan disturbing the "sound policies and administration" of the Public Roads Administration; recommendation of appeals to the C.A.A. and P.R.A. to urge the construction of expressways to airports; recommendation of acquisition of rights-of-way through the use of long-term credits for the removal of blighted areas in cities.

Among the delegates attending the Washington sessions were 40 persons representing 19 foreign countries. Most of these attended the meetings of the Pan American Division, at which Rene S. Pulido y Morales presided. The following countries were represented: Bolivia, Canada, Costa Rica, Mexico, Guatemala, Cuba, Nicaragua, Paraguay, Brazil, Chile, Colombia, Dominican Republic, El Salvador, Panama, Peru, Spain, Uruguay, and the Philippine Republic. Also present at the sessions were two students of the University of Pittsburgh who hail from Turkey. They attended the conference as representatives of the A.R.B.A. chapter at the university.

In his address on the association's future, Col. E. R. Needles, newly elected president, declared that its strength would lie in the mutual supplementing of each separate group by all the others. He termed A.R.B.A.'s technical activity one of the keystones of the organization's structure. He also stressed the importance of good public relations work in building up the association. As a prime means of attracting the best American talent to highway engineering, he recommended greater emphasis upon the work of the Educational Division. Colonel Needles urged the promotion of ever better road building as a vital factor for the advancement of civilization.

Other top officers elected at the conference included Jennings Randolph, who was chosen treasurer to succeed the late Captain H. C. Whitehurst, and the following four regional vice-presidents (all reelected): Paul B. Reinhold, Charles Smith, W. A. Roberts, and T. E. Stanton.

J. W. Moorhead Named Production Head of Great Lakes Carbon Div.

John W. Moorhead has been made product promotion manager for the Building Products Division of Great Lakes Carbon Corporation, according to announcement made by T. C. Carter, company vice-president. Mr. Moorhead will administer the promotion program for Great Lakes rock wool building insulation products and for Permalite plaster and concrete aggregate.

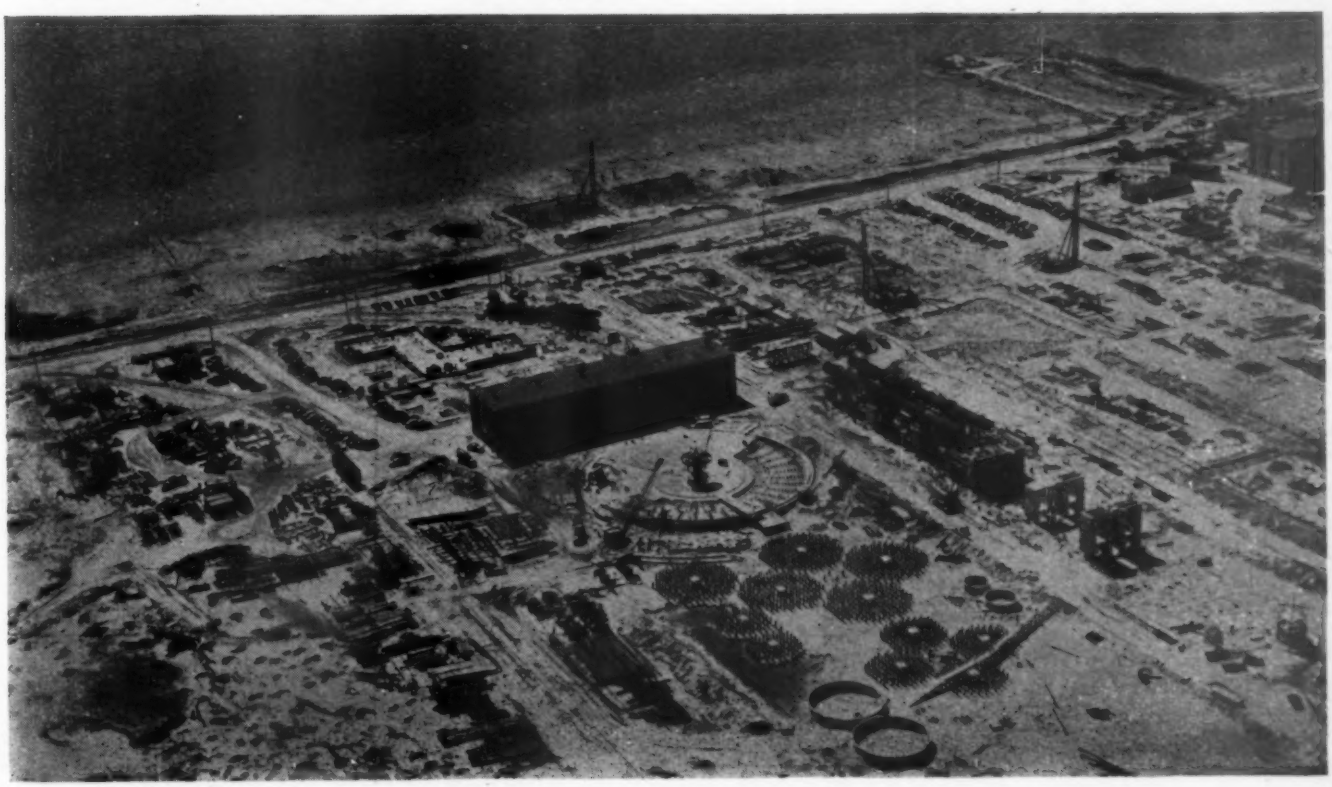
Mr. Moorhead joined Great Lakes Carbon early in 1947 after 18 years with the Aluminum Company of America, during which time he was in charge of Alcoa's building industry sales in New York, Chicago and the Midwest. During World War II he directed housing construction for that company's wartime expansion.

The Building Products Division of Great Lakes Carbon Corporation operates rock wool plants in Youngstown, O., Easton, Pa., and Argo, Ill., and a Permalite manufacturing plant in Torrance, Calif. Plans are now complete for a new processing plant on the Eastern seaboard which will turn out Permalite for use in the East.

Monazite Sands Processed By Idaho Development Group

Rare Earths Development Company, an outgrowth of Rare Earths, Inc., has been formed at McCall, Idaho, to process monazite sands.

Mr. and Mrs. Leland Waggoner of Chicago organized Rare Earths, Inc., in 1948 and built a $125,000 plant at McCall. They processed monazite sands from the deposits at Centerville and in November of last year shipped a 40-ton car of monazite concentrate to Chicago.



• An aerial view of Tex-Mex Cement Corporation's new wet-process cement plant under construction at Corpus Christi, Tex. Present plans call for completion of this two-kiln plant in the fall of 1949. Limestone for its operation will be supplied from a nearby bed of oyster shells. Details and specifications for the plant were drawn by the MacDonald Engineering Co.

1100 Technical Men Attend A.S.T.M. Committee Week

Many new specifications and tests for materials and numerous revisions were completed during A.S.T.M. Committee Week in Chicago beginning February 28, and much new research work was discussed at the 300 meetings of the society's technical committees. A large number of meetings are concentrated during this week so that the committee members—leading technical men concerned with specifications and tests—can attend the various committee meetings with considerable saving of time and expense. This year the registration total was over 1100, but this figure varies from year to year depending upon the number of committees which meet.

Most of the new and revised standards completed at the meeting are subject to letter ballot in the committees before they are referred to the parent society for action. Most of the new specifications will be considered finally at the A.S.T.M. annual meeting in Atlantic City during the week of June 27, although some may be approved prior to the meeting through the Administrative Committee on Standards which can act for the society in deciding whether a consensus has been reached in the technical groups.

Committee C-1 on Cement approved for submission to the society a new tentative method for determination of sodium oxide and potassium oxide in portland cement with a flame photometer, as a quick and accurate method for such determinations. Some revisions were made in C 151 (method of test for autoclave expansion of portland cement), and arrangements were made to bring safety precautions to the attention of the operators of autoclaves.

Consideration is being given to the preparation of a specification for air-entraining additions to be used for intergrinding with the clinker in the manufacture of air-entraining portland cement under Specification C 175.

There was presented a very complete report giving the results of an extensive investigation to determine the optimum SO_3 content to be used in the manufacture of different types of portland cement.. An extensive report conveyed the results of a lengthy investigation of different strength tests of portland cement. Fifteen laboratories cooperated in the study, correlating the results of mortar strength tests with tests of concrete.

The committtee voted to recommend placing a maximum limit of 15 percent on the air-entrained by cements under Specification C 150 when tested in standard mortar according to Method C 185. A new tentative specification for natural cement was prepared to replace Specification C 10.

Progress reports were received from all of the subcommittees, indicating continuous activity in their respective fields of work.

Officers of the Committee C-1 are: chairman, F. H. Jackson, Public Roads Administration, Federal Works Agency, Washington D. C., and secretary, G. E. Warren, Southwestern Portland Cement Co., Osborn, O.

Committee C-9 on Concrete and Concrete Aggregates acted upon several new methods for publication as tentative or as information covering important aspects of the field. A proposed method of test for entrained air of freshly mixed concrete by the pressure method, a method of test for soft particles in coarse aggregate, and a method of test for comparing concretes on the basis of the bond developed with reinforcing steel are being circulated. The test method for evaluating admixtures published as information in the October, 1947, A.S.T.M. Bulletin has been revised in the light of comments received by the committee.

The committee has approved by letter ballot a new tentative method of test for determination of bleeding of concrete, as well as revisions in existing standards C 33 (specifications for concrete aggregates), C 131 (method of test for abrasion of coarse aggregate by use of the Los Angeles machine), and C 192 (method of making and curing concrete compression and flexure test specimens).

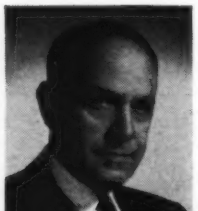
Officers of Committee C-9 are: chairman, Kenneth B. Woods, Purdue University, W. Lafayette, Ind.; and secretary, Stanton Walker, National Sand and Gravel Assn., Washington 4, D. C.

MacBride, Rutan Elected To Top Posts by Hercules

The board of directors of the Hercules Cement Corporation, Philadelphia, Pa., has announced the following elections:

Joseph Brobston, who has been president for the last 12 years, became chairman of the board of directors; D. S. MacBride, formerly executive vice-president, was elected president; Paul J. Rutan, sales manager, was elected a vice-president. These changes in the Hercules roster of officers gave effect to a shift in company management which was started more than a year ago at Mr. Brobston's request.

D. S. MacBride



P. J. Rutan

Mr. Brobston, now an elder statesman in the industry, is in his 50th year as a cement manufacturer. During his notable career in the industry he did much to further the progress of Lehigh Valley cement manufacturers. He was identified for a quarter of a century with the Dexter Portland Cement Co., then with the Nazareth Cement Company, and for the last 15 years with Hercules.

He was one of the original members of the Portland Cement Association and has been continuously active in its affairs since 1906. For more than 30 years he has been a member of C-1 Committee on Cement of the American Society for Testing Materials.

D. S. MacBride, during his 30 years in the cement industry, has been connected with the Portland Cement Association as district engineer; Lone Star Cement Corporation as vice-president of the Indiana and Pennsylvania divisions; manager, Incor Division. During the last 11 years Mr. MacBride has been successively vice-president for sales, executive vice-president and now president of Hercules.

Paul J. Rutan has devoted 40 years to the sale of building materials. His first assignment was with the Charles Warner Company in Delaware and Maryland. During the Florida boom of the 1920's Mr. Rutan was Warner's vice-president and sales manager at Miami. He entered the cement business in 1933 with the Pennsylvania-Dixie Corporation and was district sales manager at the Rochester, New York, office when he joined the Hercules organization in 1939 as assistant sales manager.

Temporary Restraining Order Removed from Gregg Operation

At Sun Valley, Calif., gravel pit operations of J. D. Gregg were released from a temporary injunction by action of the 9th U. S. Circuit Court of Appeal in San Francisco. The temporary injunction prohibiting operations at Sun Valley had been granted to 26 property owners in the Sun Valley area on December 9, 1947, by the U. S. District Court at Los Angeles.

Mr. Gregg appealed to the San Francisco court, which advised the litigants to avoid confusion by following the case through state courts. Superior Court Judge Alfred L. Bartlett stated that Mr. Gregg had obtained a zoning variance from the Los Angeles City Council to permit gravel pit operations, and that he held no power to set aside such an act. Plaintiffs claimed property damage and devaluation.

The Dicalite Division of the Great Lakes Carbon Corporation has announced a change of address for its Los Angeles offices. New headquarters since March 1 have been located in the General Petroleum Building, 612 South Flower Street, Los Angeles 14.

N.C.S.A. Releases Booklet Depicting Value of Association Memberships

The National Crushed Stone Association, 1415 Elliot Place, N. W., Washington, D. C., has recently published a new booklet called *How N.C.S.A. Serves Its Members,* the aim of which is to demonstrate to both members and non-members the value of association membership. This pamphlet is available to both members and non-members upon request to the association.

The N.C.S.A. has been representing the crushed stone industry since its organization in 1918 in Columbus, O. In 1925, the headquarters were moved to Washington, D. C., and a full-time executive secretary and engineering director were employed. A thoroughly equipped research laboratory was established in 1928 so that the work of the director of engineering could be made more effective in serving the members. A field engineer was hired in 1943 to maintain closer contact with the members and to disseminate the results of technical investigations. The Manufacturers' Division was established in 1923 and the Agricultural Limestone Institute, also a division of the N.C.S.A., was organized in 1945. The association in 1947 purchased its own buildings, which not only are attractive in appearance but also adequately house the research laboratory and executive offices.

The two main divisions of work carried on by the association can best be divided into two classifications: administrative and engineering. The former is headed by J. R. Boyd, administrative director, and the latter by A. T. Goldbeck, engineering director.

Administrative services include: representation of the industry before appropriate government agencies and congressional committees; the interpretation and clarification of government bureau regulations and acts of Congress; representing the industry in national freight rate cases; studying depletion to secure percentage depletion relief for the industry; furthering accident prevention; submitting to the members an authoritative system of cost accounting; and other appropriate services which constantly demand and receive attention.

Engineering services include: investigations in a well-equipped laboratory on many problems involving the use of crushed stone and including such general research fields as aggregates, concrete, bituminous mixtures, railroad ballast, trickling filters, and even pavement design; special investigations prepared for members on request; representation on national technical committees; the presentation of papers before technical societies and groups of producers; the conducting of short courses for salesmen; standardization activities; engineering consultation; and other activities of an engineering nature.

Through a field engineer, the association is kept in close personal contact with the members. He disseminates laboratory research information and consults with the members regarding their problems, giving an immediate solution if possible and if necessary submitting such problems for laboratory investigation.

Grand Rapids Gravel Company Sold to Dewey D. Battjes

The Grand Rapids Gravel Company of Grand Rapids, Mich., was recently sold to Dewey D. Battjes, operator of the Consumers Gravel Company of that city and the Battle Creek Gravel Company. Mr. Battjes is the uncle of the former operators, N. H. Battjes (president and general manager) and his brother, John M. (vice-president and treasurer). Associated with them in the business was their mother, Mrs. Henry N. Battjes.

The company was founded 30 years ago by N. H. Battjes, grandfather of the brothers, with H. N. Battjes, their father, and William J. Breen. H. N. Battjes headed the firm until his death in 1944.

In addition to sand and gravel the company also handles ready-mixed concrete, having pioneered in the use of the latter in the Grand Rapids area. The firm operates three plants and a fleet of 16 truck mixers.

The new owner of the firm has for many years been a minority stockholder. He is now president of the firm.

Longhorn Portland Cement Company, San Antonio, Tex., amended its charter on February 21, 1949, converting 250,000 shares of par value stock at $5.00 per share to 500,000 shares of par value stock at $2.50 ($1,250,000). $1,248,100 paid in.

$2,500,000 Cement Plant Supplies Domestic Needs Of Dominican Republic

After years of dependence upon imports for its cement needs, the Dominican Republic has developed its own cement industry. According to government officials, the $2,500,000 cement plant erected in 1947 with government funds near Ciudad Trujillo is fully meeting national needs. Imports from the United States and Belgium, it is said, are received only in periods of unusually heavy demand.

Dominican cement production is reported to have reached an annual rate of 50,000 tons, and capacity is figured at 62,000 tons. Additional equipment is currently being sought in the United States in order to increase the capacity of the plant. Although the mill is owned by the government, it sells through a private company.

Management of the entire operation is vested in a board of governors, headed by the Undersecretary of the National Economy. Present price of cement in the Dominican Republic is $5.60 per barrel. Whereas cement was formerly permitted to be imported at a low duty rate, the present tariff is $1.44 per barrel.

Addition of new equipment at the plant of the Asbestos Company of Texas at Dallas will give the company grinding facilities which will grind silica to 200-mesh. The addition housing the new mill was erected at a cost of $115,000.

• Scene at the limestone quarry of the St. Mary's Cement Co., Ltd., near St. Mary's, Ont., Canada, showing "Caterpillar" diesel rubber-tired tractors pulling Athey PD10 trailers. The average load is 12 tons, with the hauling equipment making five trips per hour on a ¾-mi. haul. A bulldozer-equipped "Caterpillar" diesel track-type tractor cleans up around the shovel.

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE April, 1919, issue of PIT AND QUARRY was a newsy one, containing numerous items on many subjects but few feature articles. The variety of news is evident from the following excerpts.

The plant of the LaSalle Portland Cement Co., formerly the German-American Portland Cement Works, La Sale, Ill., was sold by the alien property custodian to A. Y. Gowen, vice-president of the Lehigh Portland Cement Co.; Charles Boettcher, president of the Cement Securities Co., Denver; A. C. Dustin of the Sandusky Cement Co. of Cleveland; and C. H. McNider, president and general manager of the Northwestern States Portland Cement Co., Mason City, Iowa. The price paid was reported to be $1,287,000.

Quotations from a letter written by Major D. D. Guilford, sales engineer for Sauerman Bros., Chicago, from Luxembourg, to J. A. Sauerman, president of that company, told of some of his experiences in building roads for our forces during World War I. Mr. Guilford, now sales manager of Sauerman Bros., was first lieutenant of the original Company A, First Battalion of Engineers, when this unit served on the Mexican border in 1916, and was commissioned a captain in the 108th Regiment of Engineers, which he helped to organize in April, 1917. His promotion as major came in October, 1918, as a reward for excellent field service with this regiment in the Verdun sector.

Another item, entitled "Don't Kid Yourself" emphasized the importance of realistic cost accounting systems to a profitable business. With selling prices being based on calculated cost, it was called self-deception not to include every item in full. An example cited was of two partners who included in their costs salaries paid to themselves, which were less than the amount paid their shovel engineer. It was pointed out that, although these men shared in the profits, if any, they still should have drawn salaries commensurate with the importance of their jobs, and that these salaries were a legitimate part of cost. If each of their competitors did likewise, then business could be conducted on a sound competitive basis.

Proof that there is nothing new under the sun was a photograph and description of the pit belt conveyor system of the Columbia Sand and Gravel Co., near Elgin, Ill. A long field belt conveyor led from the pit to an inclined belt conveyor to the plant. The steam shovel loaded material from the pit face into a movable rail-mounted hopper from which a short conveyor, also rail-mounted, fed on the main field belt. This system moved with the shovel, making cuts along the face paralled to the field conveyor.

The Automatic Gravel Products Co. bought a 40-acre tract near Muscatine, Ia., and announced plans for a 3,000-ton-per-day plant. Incorporators included P. F. McCarthy, president, and L. S. Wunder, of the McCarthy Improvement Co., Davenport, Ia.

An efficient system for unloading sand and gravel from cars and reloading into trucks was used in one of the Milwaukee yards of the Janesville Sand & Gravel Co. A row of concrete bins was straddled by a traveling crane structure running on rails on both sides of the bins. An overhead traveling crane with a 1-cu. yd. clamshell bucket traversed the length of the framework, picking up material from railroad cars and discharging it into the bins. In an emergency the bucket could discharge material into storage piles in back of the bins.

A feature article described and illustrated the large new vertical-kiln lime plant of the Mitchell Lime Co. at Mitchell, Ind. This plant had six 10½- by 26-ft. kilns with space for six more. The coal-handling system, described as automatic, consisted of a track hopper from which a belt conveyor fed a crusher. A bucket elevator fed the crushed coal to screw conveyors which dumped the coal on the floor at the kiln fireboxes. The feed to the kilns was manual.

With the convention season about over, only one meeting was reported, that of the Iowa Sand and Gravel Producers' Assn., February 27 and 28, at Des Moines. Officers elected were: president, R. C. Fletcher, Flint Crushed Gravel Co., Des Moines; vice-president, C. H. Boynton, Northern Gravel Co., Muscatine; secretary-treasurer, C. V. Ray, Capital City Sand Co., Des Moines.

• A Euclid 49FD (with top extensions) receives a 15-ton load of gypsum rock at the Pacific-Portland Cement Company's operation near Gerlach, Nev.

Northwest Insulations Co. Opens Fourth Zonolite Plant

At Portland, Ore., a new industry—a zonolite processing plant—was scheduled to go into production early in April, according to an announcement made by J. B. Lyall, vice-president of Northwest Insulations Company at Spokane.

Quarters with 10,000 square feet of floor space have been leased, and remodeling involving the expenditure of $75,000 is now in progress. Vermiculite will be expanded for use in insulation, plaster aggregate and lightweight concrete aggregate. (Zonolite is a trade name.)

Mr. Lyall disclosed that another plant may be opened later in Alaska. The Portland plant is the fourth installed in the Northwest by this company, which has been processing vermiculite for 14 years. Two plants are located at Libby, Mont., and one at Spokane.

Leo Hall, formerly assistant manager at Spokane, will become division manager at Portland, stated Mr. Lyall. Mr. Hall had been manager in charge of zonolite for the Western Mineral Products Company of Milwaukee, Wis., before joing the staff of Northwest Insulations.

WASHINGTON NEWS LETTER

By S. HERBERT UNTERBERGER

THERE are many things happening in Washington that are more dramatic, but there are few that are more important than the Federal Budget. While labor legislation and the "cold war" make the headlines, the real foundation of the government's operations are contained in the Budget, which is essentially the President's estimate of what it will cost to run the government for the next fiscal year and what the government's income is likely to be. What the tax bill will be next year is determined more by what is included in the Budget than by what happens to corporate, income, and other tax rates. Regardless of how meritorious, very few governmental activities ever come to pass if they are not covered by the Budget. If one wants to know whether road building or flood control or airplane construction is likely to increase next year, the place to look is in the Federal Budget. Although it is a heavy volume, chock full of statistics, one can be sure that it makes fascinating reading in many foreign countries, particularly for our potential adversaries. It is regrettable that this literature is so ignored by American citizens. This letter will, therefore, concentrate on a summary of its most important provisions.

The Budget which is presently being considered covers expenditures for the fiscal year 1950, running from July 1, 1949, through June 30, 1950. It covers total expenditures of 41.9 billion dollars. In addition, the President has stated that he expects to request funds for several more programs, the most important of which is likely to be direct military assistance to Western Europe.

Even the 41.9 billion dollar figure is 1.7 billion more than expenditures are likely to be in the present fiscal year ending June 30, 1949, and is 4½ times the amount spent in our last peace-time fiscal year 1940. Fully one-half of the total, 20 billion dollars is planned to be spent for national defense and international aid. An additional quarter of the total will go to pay for expenditures arising directly out of war, services and benefits to veterans and interest on the public debt. This leaves only the remaining quarter, about 10 billion dollars, to pay for all the other activities of the federal government, including the trade activities of the Commerce Department, the housing program, the road building program, the airport program, flood control, reclamation, statistical collection and analysis, the maintenance of the courts, the various regulatory activities, the subsidies to shipping, air carriers, etc., an expanded social security program, and the multitude of other domestic activities of the government.

The best calculations which can now be made indicate that if the tax laws are not changed, the fiscal year 1950 will see a deficit of 900 million dollars. No reduction in the public debt would, of course, be possible. The President's request for a 4 billion dollar increase in taxes in addition to the proposed increases in social security taxes is for the purpose of covering this deficit and providing a surplus, principally to further reduce the public debt, but also to diminish the threat of further inflation.

Military expenditures are the principal cause for the increase in the coming fiscal years. The history of recent defense spending is as follows:

Fiscal year 1940— 1.5 billion dollars.
Fiscal year 1947—14.3 billion dollars.
Fiscal year 1948—10.9 billion dollars.
Fiscal year 1949—11.7 billion dollars (est.)
Fiscal year 1950—14.3 billion dollars (est.)

It may be seen that the plan is to spend 2.5 billion dollars more than in the current year. Of the total amount, 5 billion dollars will go for pay and maintenance of 1,616,000 officers and men. This includes some allowance for increases in the rates of pay. An additional 2 billion dollars is to cover the proposed program of universal military training. The next largest item is expenditures for aircraft and related procurement, shop construction and military public works. This amounts to 2.4 billion dollars, an increase of about 700 million dollars accounted for principally by additional expenditures for aircraft.

Expenditures for international affairs are expected to decrease from 7.2 billion dollars this year to 6.7 billion dollars next year. This decline is attributed principally to smaller outlays under the Marshall Plan. The decline may, however, be converted into an increase if the so-called North Atlantic Pact is fully ratified and military supplies are furnished to its other signatories.

Most of the other activities of the federal government are not expected to increase significantly in cost except for the social service programs. Grants in and to the states for payments to the aged, the blind, dependent children, for school lunches, for hospital construction and for similar welfare programs will rise by 400 million dollars to a total of 2.9 billion dollars. Extensions of the social security program to cover 25 million additional workers, increase the scale of benefits, provide disability insurance and a comprehensive national health program would cost 1.7 billion dollars in fiscal year 1950. But additional social security taxes will bring in 2 billions.

Of special interest to the pit-and-quarry industries are the planned expenditures for housing and community facilities of 390 million dollars, a total slightly larger than that of the preceding year. This includes the initial expenditures under the following proposed new programs: (1) a seven-year program of federal aid to local housing agencies for the construction of low-rent housing units; (2) a long-term program of federal grants to and loans to cities for slum clearance and urban redevelopment; (3) programs providing credit assistance for rental and cooperative housing and for farm housing.

The annual federal outlay for these purposes is scheduled to rise sharply over the next few years.

Other budgeted expenditures which will increase the demand for construction materials, including those supplied by the pit-and-quarry industries include the following:

	1949	1950
	(in millions)	
Military public works	286	302
Veterans' hospital construction	186	261
Low-rent housing program	15	129
Farm housing program	0	20
Slum clearance	0	10
Rental and co-operative housing	0	50
Missouri Basin flood control	1	4
Corps of Engineers	442	481
Reclamation	282	340
TVA	29	49
Highways	489	532
Public buildings	78	96

(*Continued on page* 71)

Aggregates FOR ALLATOONA DAM

General view of Allatoona Dam taken about a year after construction work began. The project is located on the Etowah River near Cartersville, Ga. The completed structure will contain about 500,000 cu. yds. of concrete.

another ON THE SPOT report

ONE of the largest single post-war contracts for aggregates in the South is now nearing completion at White, Ga., about 10 miles north of Cartersville. A joint venture of Lambert Brothers, Inc., Knoxville, Tenn., and the Kershaw Mining Company of Birmingham, Ala., the contract called for the production of nearly 1,000,000 tons of crushed stone and stone sand to be used in the construction of Allatoona Dam on the Etowah River near Cartersville.

The project is the initial step in a comprehensive plan for the development of the water resources of the Alabama-Coosa River System. The dam is a gravity-type structure with a gate-controlled spillway; and when completed it will rise 190 ft. above the bed of the river. It will contain about 500,000 cu. yds. of concrete. Although the primary purpose of the project is flood control, there will be an initial 74,000-kw. power installation which is expected to produce approximately 178,000,000 kw.-h. of electric energy in a normal year.

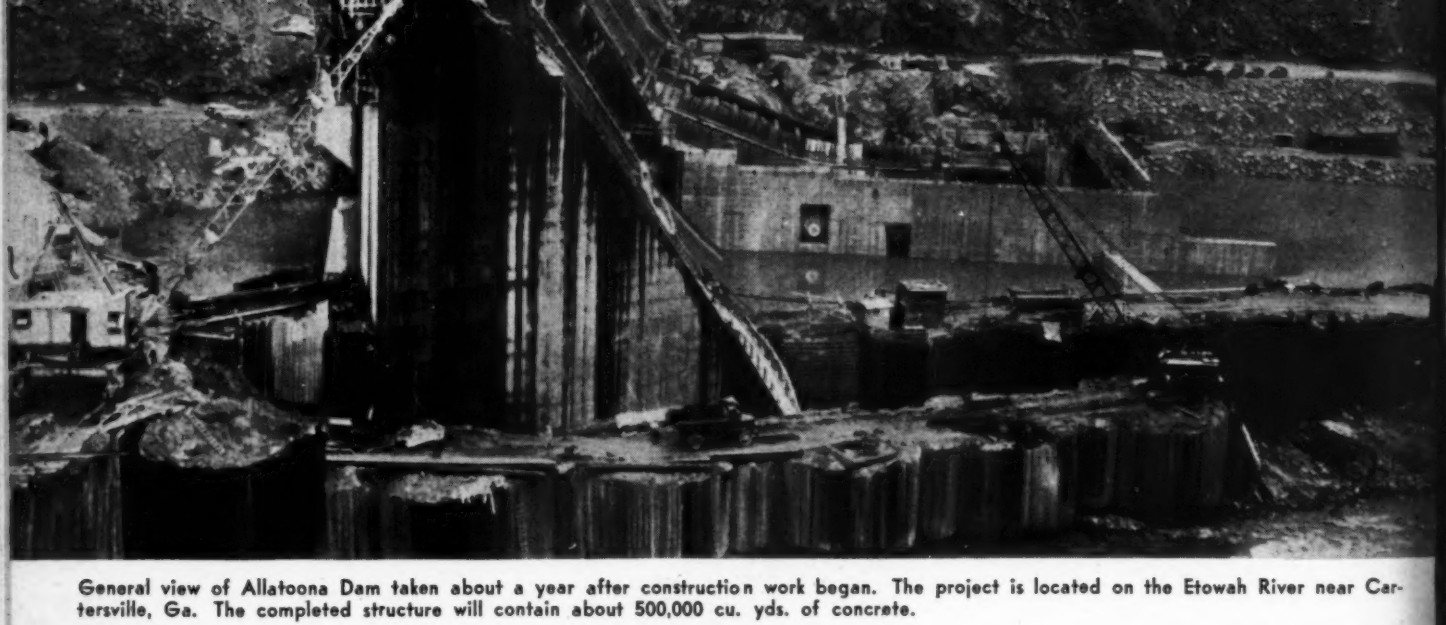
To provide the tremendous quantities of aggregates required in a project of this size, Lambert Brothers and Kershaw Mining Co. first made a careful survey of suitable stone deposits in the area. They finally selected an undeveloped property located near White, Ga., about 15 miles northwest of the dam site, and a lease was arranged covering approximately 60 acres. Core drillings to a depth of 100 ft. showed the deposit to consist of an exceptionally uniform high-grade dolomitic limestone, with a texture closely resembling granite.

Lambert Brothers Develop Quarry Near
Tons of Crushed Stone and Stone Sand

Left: A portion of the aggregate plant as seen from the primary crusher, showing the secondary crushing and screening tower and part of the network of conveyors used to stack finished materials.

By William M. Avery

Cartersville, Ga., to Produce 1,000,000 for Etowah River Flood Control Project



General view of Allatoona Dam taken about a year after construction work began. The project is located on the Etowah River near Cartersville, Ga. The completed structure will contain about 500,000 cu. yds. of concrete.

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Lambert Brothers Develop Quarry Near Tons of Crushed Stone and Stone Sand

Stone is loaded at the rate of about 340 cu. yds. per hour with a 2-cu. yd. diesel-powered

er. They carry an average load of 15 tons, or about 9 cu. yds. with side boards in place. Although the haul is relatively short, the grade ranges from 20 to 25 percent for most of the distance, and the total climb is now well over 100 ft.

The trucks discharge at the top of a ramp into a steel hopper over a 4- by 14-ft. Telsmith apron feeder. Primary reduction is by a Telsmith 30- by 42-in. jaw crusher set at 8 in., from which the stone is conveyed by belt to a 5,000-ton surge pile (live storage capacity about 2,500 tons). Stone is bottom-fed from the storage pile onto a 36-in. wide tunnel conveyor. From an inclined belt conveyor the entire flow passes over a 5- by 12-ft. double-deck Type B. Allis-Chalmers vibrating screen. Oversize stone (plus 6-in.) is recrushed in a 16-B Telsmith and returned to the screens, while plus 3-in. stone is recrushed in a 48-in. Telsmith Gyrosphere. Two finished sizes (1½-in.

By William M. Avery

Cartersville, Ga., to Produce 1,000,000 for Etowah River Flood Control Project

completion of the job. Gates in the main finished material tunnel are operated by cable from the loading plant.

Only one size of finished material is loaded at a time. The desired size is bottom-fed from the stockpile onto a 30-in. by 300-ft. reclaiming belt which discharges on a 4- by 12-ft. double-deck pioneer screen set over the truck loading bin. Here the stone is washed with high-pressure sprays just before it is loaded onto trucks. The Shinall Trucking Co. of Cartersville does all the hauling to the dam site with a fleet of 20 Ford and White trucks mounting 8-ton Fruehauf trailers. Deliveries average 2,500 to 3,000 tons in an 8-hr. day.

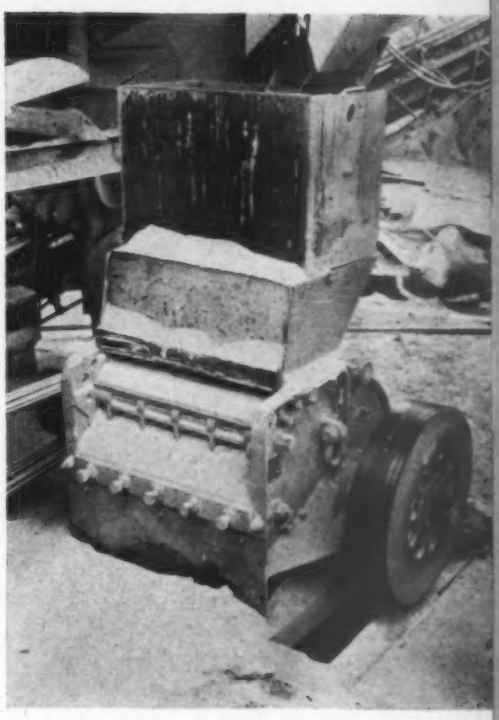
About 2,500 tons of stone is processed at the plant in an 8-hr. day. With the exception of the sand plant, which operates 16 hrs. per day, the entire operation is set up on a single-shift basis six days per week. Stone sand output ranges from 40 to 50 t.p.h., including the minus 100-

In the sand plant fines are produced with this 40 by 33 hammermill. Another somewhat smaller unit is also used in the sand circuit.

of finished materials stored at the plant.

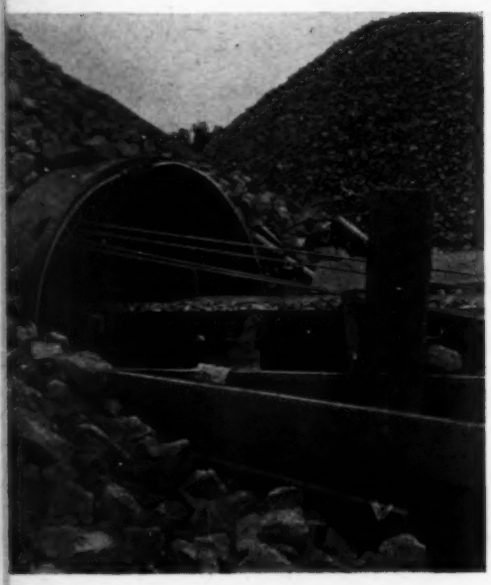
Although the Allatoona aggregate plant is a strictly temporary affair, and will be dismantled as soon as the contract has been completed, it is as well planned and equipped as any permanent installation. Except for some of the belt conveyors, all the equipment was purchased new. There are 17 belt conveyors in all, ranging from 18 to 36 in. in width, and with a total length of almost 1,700 ft. Most of them are equipped with Goodyear belts.

At the dam site National Constructors, Inc., the general contractors, operate a central mixing plant. There the materials are proportioned in 4-cu. yd. batches at the rate of one batch every 90 seconds. Close tolerances are maintained on all ingredients by means of $(SC)^2$



Stone is loaded at the rate of about 340 cu. yds. per hour with a 2-cu. yd. diesel-powered shovel. The truck shown is one of four end-dump units which carry an average load of approximately 9 cu. yds.

The stone was covered with red clay overburden ranging from 4 to 6 ft. in depth. Stripping operations were carried on with three primary units of equipment—an 8-cu. yd. LeTourneau scraper powered by a D-8 Caterpillar tractor, a 3½-cu. yd. Lima No. 1201 dragline, and a ⅜-cu. yd. Bucyrus-Erie shovel. The latter machine was used for cleaning out the long crevices, ranging from 2 to 6 ft. in width and from 3 to 8 ft. in depth, which were found when the rock was exposed. As the stripping progressed the overburden material was used to construct a 50-ft. dike around the low side of the 400- by 900-ft. quarry area as protection against surface water. In addition to this precaution, three Jaeger pumps are kept on stand-by to de-water the working areas when necessary.



The end of one of the four reclaiming tunnels in the plant. Cables leading into the tunnel are used to operate gates in the roof.

The quarry is worked in 20-ft. lifts. Six Ingersoll-Rand FM-2 wagon drills, with 3- to 2-in. diameter steel, are used for primary drilling, power being supplied by a 1,575-cu. ft. Ingersoll-Rand stationary compressor located at the top of the quarry. The wagon drills average from 8 to 10 ft. of hole per hour. From 200 to 300 holes, spaced 5 by 6 ft. with 6 ft. of burden, are fired at intervals of two or three weeks. All shooting is done with Atlas 60-percent dynamite and Rockmaster delay caps. Although excellent breakage has been the rule, some secondary shooting is required from time to time. Drilling for this purpose is done with three Gardner-Denver and two Cleveland jackhammers.

At the time of our visit the quarry had been worked to a depth of about 60 ft., and the operators anticipated going two or three additional lifts before completing the contract. Loading is done at the rate of 340 cu. yds. per hour with a 2-cu. yd. Bucyrus-Erie shovel powered by a 17,000-hp. Caterpillar diesel engine. A Model C2 LeTourneau Tournadozer is used for cleanup work on the floor of the quarry.

Four Model 27FD rear-dump Euclid diesel trucks haul the stone from the face to the primary crusher. They carry an average load of 15 tons, or about 9 cu. yds. with side boards in place. Although the haul is relatively short, the grade ranges from 20 to 25 percent for most of the distance, and the total climb is now well over 100 ft.

The trucks discharge at the top of a ramp into a steel hopper over a 4- by 14-ft. Telsmith apron feeder. Primary reduction is by a Telsmith 30- by 42-in. jaw crusher set at 8 in., from which the stone is conveyed by belt to a 5,000-ton surge pile (live storage capacity about 2,500 tons). Stone is bottom-fed from the storage pile onto a 36-in. wide tunnel conveyor. From an inclined belt conveyor the entire flow passes over a 5- by 12-ft. double-deck Type B. Allis-Chalmers vibrating screen. Oversize stone (plus 6-in.) is recrushed in a 16-B Telsmith and returned to the screens, while plus 3-in. stone is recrushed in a 48-in. Telsmith Gyrosphere. Two finished sizes (1½-in. and ¾-in.) are screened out on a 5- by 12-ft. double-deck Robins Gyrex screen, and minus ¾-in. stone runs out on a separate surge pile from which the sand plant is supplied.

Both ¾-in. stone and some sand are produced directly from the surge pile on two 5- by 12-ft. double-deck Telsmith screens. At the outset some wet classifying was attempted in the sand plant, but this practice was abandoned after a few months in favor of dry recovery. Normally moisture in the stone doesn't present any serious problem, but a 40-in. diameter by 30-ft. long Buffalo rotary dryer is available when needed. Crushing equipment in the sand section consists of two Cedarapids hammermills (40 by 33 in. and 30 by 33 in.), and a 22- by 40-in. Austin-Western roll crusher. Final recovery of sand is effected by a 10-ft. Sturtevant air separator which is used to remove excessive 100-mesh material from the product. Periodic adjustments are made to keep within the limits of the specification. As shipped the sand is all minus No. 8 except for about 5 percent of minus ⅛-in. material.

The plant is set up to produce four sizes of stone: minus 6- plus 3-in.; minus 3- plus 1½-in.; minus 1½- plus ¾-in.; and minus ¾- plus ¼-in. Barber-Greene stackers are used to stockpile these four sizes over an 84-in. diameter reclaiming tunnel. All four reclaiming tunnels in the plant are constructed of arched corrugated steel sheets, so that the tunnel material itself can be salvaged and reused after the

completion of the job. Gates in the main finished material tunnel are operated by cable from the loading plant.

Only one size of finished material is loaded at a time. The desired size is bottom-fed from the stockpile onto a 30-in. by 300-ft. reclaiming belt which discharges on a 4- by 12-ft. double-deck pioneer screen set over the truck loading bin. Here the stone is washed with high-pressure sprays just before it is loaded onto trucks. The Shinall Trucking Co. of Cartersville does all the hauling to the dam site with a fleet of 20 Ford and White trucks mounting 8-ton Fruehauf trailers. Deliveries average 2,500 to 3,000 tons in an 8-hr. day.

About 2,500 tons of stone is processed at the plant in an 8-hr. day. With the exception of the sand plant, which operates 16 hrs. per day, the entire operation is set up on a single-shift basis six days per week. Stone sand output ranges from 40 to 50 t.p.h., including the minus 100-mesh removed by air separation. The latter material is being marketed as agricultural limestone.

Close control is exercised over the proportions of the various sizes of stone produced, in order that the material delivered to the dam site will closely approximate the day-to-day requirements of the general contractor. In the main, this is accomplished at the secondary crushing and screening tower, where the screens and the secondary crusher are arranged in closed circuit. Adjustments at this point in the flow make it possible to produce almost any desired quantity of any particular size, or to cut off any size of which there is an ample supply at the job site. This close integration between the operations of aggregate plant and the material requirements at the job is maintained in some measure by restricting the quantities of finished materials stored at the plant.

Although the Allatoona aggregate plant is a strictly temporary affair, and will be dismantled as soon as the contract has been completed, it is as well planned and equipped as any permanent installation. Except for some of the belt conveyors, all the equipment was purchased new. There are 17 belt conveyors in all, ranging from 18 to 36 in. in width, and with a total length of almost 1,700 ft. Most of them are equipped with Goodyear belts.

At the dam site National Constructors, Inc., the general contractors, operate a central mixing plant. There the materials are proportioned in 4-cu. yd. batches at the rate of one batch every 90 seconds. Close tolerances are maintained on all ingredients by means of $(SC)^2$ precision concrete control. Concrete requirements for the entire job will approximate 500,000 cu. yds. The project is supervised by the Mobile district office of the Corps of Engineers.

From 45 to 50 men are employed in quarrying, crushing and screening the aggregates for Allatoona. J. B. Lambert is superintendent of the plant and J. B. Harding is purchasing agent. Other key members of the Lambert firm are W. E. Lambert, president, and John and Ray Lambert. G. C. McCullough of Birmingham operates the Kershaw Mining Co.

In the sand plant fines are produced with this 40 by 33 hammermill. Another somewhat smaller unit is also used in the sand circuit.

Washington News Letter

(*From page* 67)

A final observation worth making is that what is included in the Budget is not necessarily what is finally approved by the Congress. A certain number of items can be counted on to change. For example, there is a real likelihood that the housing program may turn out to be less ambitious than originally planned. On the other hand, certain Congressional pet projects are not included in the Budget, but are pretty certain to come out of the Congress. As usual that body may be expected to make a big show about cutting the Budget. But it should be remembered that for many years now, after the show is over, it has turned out that the Congress has appropriated more money than the President has requested.

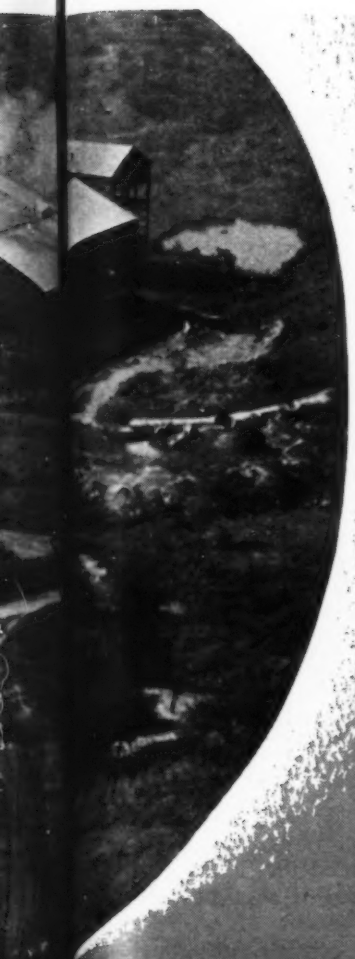
Left: As the initial step in the production of stone sand, minus ¾-in. material is fed to this 22- by 40-in. roll crusher.

Right: This 10-ft. air separator is used to remove excess 100-mesh material from the sand product.

MORE

• Installation of a new kiln has permitted the Diamond Portland Cement Company to boost its output an estimated 50 percent

ECEMENT from Middle Branch



• By EDWARD BRUNENKANT

another ON THE SPOT report

THE record consumption of cement in the United States during the last two years has contributed in a very large measure to probably the worst cement-supply problem that this country has ever experienced. The agonized howl from those consumers who have been pinched by the short supply of cement has been amplified by newspapers, by congressmen and by others whose criticisms have tended to give the whole industry a black eye.

Unfortunately, the general public and, to a large extent, the consumers are unaware of the gigantic efforts expended by cement companies to increase their production facilities so as to be able to meet the demand for more cement. In the last 48 months these pages alone have recorded the addition of new production facilities of no less than 29 plants, with resulting increased cement capacity of many thousands of barrels. It is with great pleasure, therefore, that we add to that record the story of the expansion pro-

• Left: An aerial view of The Diamond Portland Cement Company's plant at Middle Branch, O. This photograph was taken before the installation of the new kiln.

• Opposite page, left: R. D. Raff (left), president, and E. H. Raff, vice-president, posed for this picture outside the main entrance of the company's attractive office building.

• Opposite page, right: Two men primarily responsible for the operations at Middle Branch: E. R. Evans, plant manager (left), and Anthony Turk, chief engineer (right).

• Below: This rather odd piece of equipment is known as a stacker and is used to overcast the overburden, which ranges between 10 and 60 ft. in depth. The stacker-bridge is mounted on self-propelled crawlers permitting it to keep abreast with the 2½-cu. yd. shovel which strips the overburden.

gram at The Diamond Portland Cement Company's plant at Middle Branch, O., where the annual production capacity was boosted an estimated 50 percent.

Perhaps it is rather meaningless to indicate in any way that the modernization program has been completed at Middle Branch, since it is but one of numerous such changes and improvements that have marked Diamond's 57 years of progress. Without the benefit of many changes in equipment and plant made in the past, it would have been nigh on impossible—or at least economically unfeasible at this time—to jump the plant's output 50 percent with only one major addition — the installation of a third kiln.

Before this new Traylor kiln was installed, the capacity of the crushing and raw grinding departments greatly exceeded the capacity of the kiln department, due to previous improvements made in the former departments and to overlong delivery schedules on kiln equipment. Operation of the new kiln has eliminated this bottleneck and, what is more important, has permitted the company to increase its production.

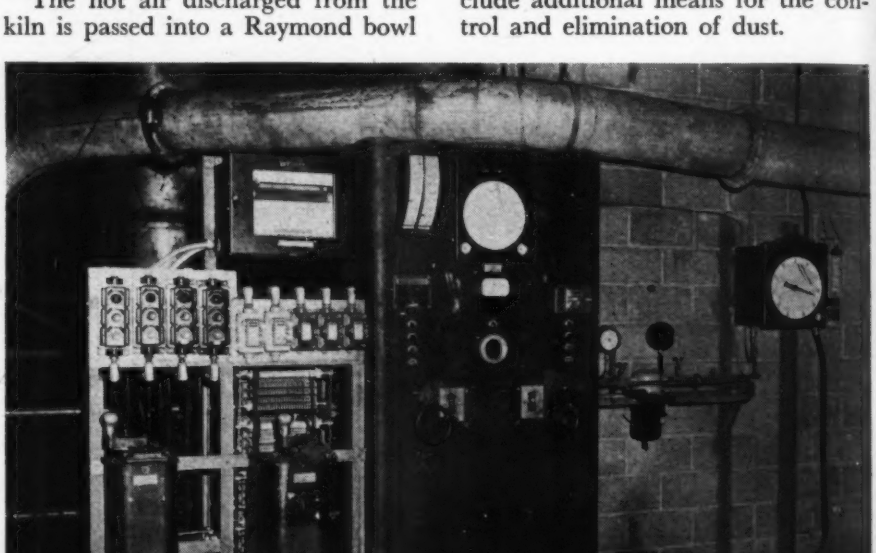
Because of the physical limitations of existing structures it seemed wiser and less expensive to match the size of the new Traylor kiln with the two older Reeves units. In addition, keeping all kilns the same size, 10- by 150-ft., permitted easy alignment of the discharge ends of the kilns, so that a single drag chain could carry away the clinker from all three.

The new Traylor kiln is of an all-welded design, supported on two tires, and powered by a direct drive connected through a speed reducer. Speed of rotation ranges from 30 to 60 r.p.h. with optimum speed to be determined at a later date when more nearly complete operating data is available. The kiln is set at an inclination of ½ in. per ft.

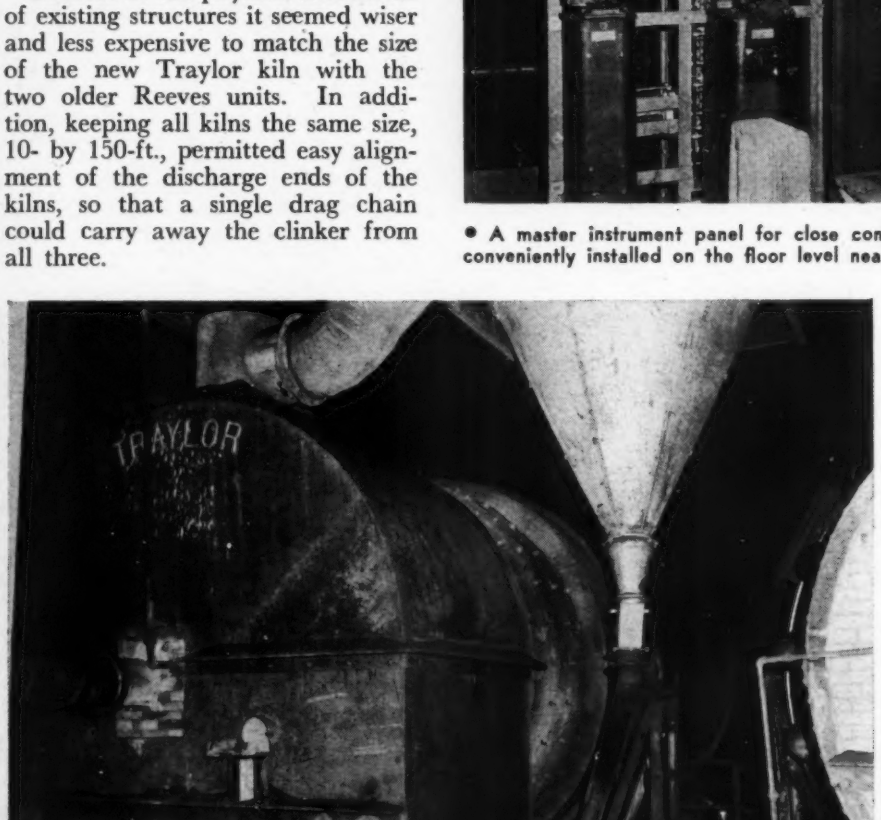
It is equipped with the new type "S" Vanderwerp recuperator, whose principal use, in this installation, is to cool the clinker. About a 1000-deg. F. drop in clinker temperature is effected.

The hot air discharged from the kiln is passed into a Raymond bowl mill, one for each kiln, which pulverizes and dries the coal in one operation. According to the plant manager, this coal mill in combination with the recuperator has practically eliminated kiln rings. A master control panel for the bowl mill, serving the Traylor kiln is conveniently located on the floor level near the hot end of the kiln.

Two banks of Buell dust collectors, 6 cyclones in each bank, were installed along with the new kiln. Stack fines collected are fed back into the kiln feed tank. Future plans for new construction will include additional means for the control and elimination of dust.



• A master instrument panel for close control of the coal mill serving the new kiln was conveniently installed on the floor level near the hot end of the kiln.



• The firing end of the new kiln. In order to stay within the physical limits of the existing buildings, the size of the new kiln was held down to 10 by 150 ft.

Because the overburden varies from 10 to 60 feet in depth at this quarry, a rather unusual method of overcasting overburden is employed, which makes use of an odd-looking piece of equipment known as a stacker. This consists of an oversize portable conveyor or loader. The one used at Middle Branch has a 150-ft. boom inclined at an 18-deg. angle supporting a 36-in. belt. The bridge is mounted on self-propelled crawlers permitting the entire unit to keep abreast with the Bucyrus-Erie 2½-cu. yd. electric shovel which strips the overburden. The overburden is overcast over the shovel and quarry face and piled up in windrows on the worked-out quarry floor.

The layer of stone runs between 8 and 10 ft. in thickness. Its calcium content ranges between 85 and 92 percent. Because of the high friability of this formation, less than one-half ton of dynamite is con-

(*Continued on page* 83)

Report on Current Labor Developments

General Motors Formula

WHEN the United Auto Workers and the General Motors Corporation signed an agreement in May of 1948 providing that wages would rise and fall with the cost of living, it was reported as an interesting development, but one which was unlikely to have any practical results. At that time all indications were that the upward trend in the cost of living, practically unbroken for nine years, would continue for some time. As anticipated, wages were raised under this contract in September, 1948, following a further increase in the cost of living. It was probably not expected that by February of 1949, the cost of living trend would have reversed itself, with the result that wages were reduced by two cents an hour.

By S. HERBERT UNTERBERGER

Many employers have become interested in the so-called General Motors Formula and may be suggesting similar arrangements in their forthcoming collective bargaining conferences. It is important, therefore, that the features of the General Motors arrangement be well understood.

Contrary to the general impression, the General Motors contract did not provide a simple arrangement whereby every time the cost of living rose, wage rates would rise and whenever the cost of living fell, wage rates woud fall. It is much more complicated than that, and the wage raises provided are much less reversible.

To begin with, the General Motors contract is for two years, expiring on May 29, 1950. When the contract was signed in May, 1948, the employees were granted an 11-cent-per-hour wage increase. Of this amount, 6 cents per hour can not be taken away, regardless of how far the cost of living may fall. In addition, on the first anniversary of the contract, May 29, 1949, a further 3-cent-per-hour increase will be given which also is not subject to withdrawal should the cost of living decline. Thus the General Motors contract guaranteed a total increase of nine cents an hour over a period of two years. Doubtless, without this guaranteed wage increase, the other parts of the contract would not have found acceptance.

Thereafter, there was to be a quarterly review with adjustments to be made as the Bureau of Labor Statistics cost of living index rose or fell. These adjustments amounted to one cent per hour for 1.14 point change in the index.

This is what has happened under the formula. At the first quarterly review on September 1, 1948, the cost of living index used for measurement was as of July 15, 1948. On that date, the index stood at 173.7. This was 4.4 points higher than the standing of the index three months earlier, on April 15. This development called forth a 3-cent-per-hour increase in wage rates.

By the next quarterly review on December 1, there was practically no change in the cost of living index and therefore no change in wages was required.

For the third quarterly review on March 1, the January 15, 1949, cost of living index was used. That index had declined to 170.9. This, therefore, called forth a reduction of two cents per hour.

It should be noted that the net increase now stands at 12 cents per hour. Furthermore, on May 29, 1949, another 3-cent increase which is irrevocable will go into effect. However, three days later, on June 1, the next quarterly review will take place; and whether wages go up further or come down will depend on where the April 15, 1949, cost of living index stands.

There are both advantages and disadvantages in relating changes in wage rates to changes in the cost of living. Among the most significant advantages is the fact that it is an automatic way for making sure that a worker will be able to maintain approximately the same *standard of living* regardless of what changes occur in the *cost of living.* It also has the advantage of roughly adjusting the employer's labor cost to price changes. When prices fall his labor costs fall and *vice versa.* Among the principal disadvantages is the fact that the administration of such a formula is complicated. Furthermore, the worker's relation to the employer may become embittered, particularly when the formula produces wage cuts. This feeling may result in lower output.

Re-employment of Veterans

A recent decision of the Sixth Circuit Court of Appeals has clarified and somewhat simplified the problem of re-employing veterans. The court made it very clear that it is not necessary to re-employ a veteran in the precise position which he left to join the armed services. All that the law requires is that he be re-employed in a position of like seniority, status and pay. This is the rule, even if the veteran's former position continues to exist. The court carefully points out that the law protects the veteran from receiving a job inferior to that which he had before entering the armed services.

In the case in which this decision was made the veteran was formerly employed as a salesman in a certain territory. Upon return from service he was offered a position which was comparable in all respects except that its headquarters were in a different city. The court found that having made this offer, the employer had discharged his obligations under the law.

The court said: "The clearly expressed intention of Congress is twofold: first, to protect the veteran by insuring him re-employment, and second, to give the employer leeway in adjusting to the dislocations caused by the departure of men in great numbers to filled the armed services."

Available Graphite Reserves Revealed in Alabama Counties

Large measured reserves of easily-handled graphite ore in Clay, Coosa and Chilton Counties, Ala., are sufficient to maintain an industry meeting demand for specialized graphite products for many years, according to a report released today by James Boyd, director of the U. S. Bureau of Mines. Inferred reserves, together with measured reserves of ore which is difficult to treat, are even greater, the report adds.

Noting that Madagascar flake graphite is preferred to the American product for making crucibles, the report states that the future of the Alabama graphite industry depends upon its ability to supply other outlets. It notes that the foundry trade and makers of dry batteries together require about 60 percent of the graphite used in this country. Other uses cited include heavy machinery lubricant, steam-engine packings, paint for steel structures, substitution for carbon in brushes, a base for boiler compounds, coating for prepared roofing, for treated seed such as beans and peas to prevent clogging the planting drills, for coffee beans and tea and for grains of black and smokeless powder, as well as increasing the carbon content of steel.

Sand and Gravel Producers Hold 33rd Annual Convention at New York City

another ON THE SPOT report

THE 33rd annual convention of the National Sand and Gravel Association, held at the Hotel New Yorker, New York City, during the week of February 14, 1949, was one of the most successful ever held. Fully combined for the first time with the annual convention of the National Ready Mixed Concrete Association, the total registration for both meetings was nearly a thousand, the highest on record except for the 1948 meeting in Cincinnati, when there was the added inducement of a machinery exhibit. All meetings were well attended, even the three-night sessions which helped to make this one of the most businesslike meetings on record. To a greater extent than ever before, the speakers were drawn from the ranks of the industry.

• Re-elected as officers of the National Sand and Gravel Association are (left to right): A. R. Shiely, secretary-treasurer; T. E. Popplewell, president; and H. N. Snyder, vice-president.

Officers In accordance with the custom, the entire slate of officers was re-elected. They are: president, T. E. Popplewell (Fort Worth Sand & Gravel Co., Fort Worth, Tex.); vice-president, H. N. Snyder (Buffalo Slag Co., Buffalo, N. Y.); secretary-treasurer, A. R. Shiely (J. L. Shiely Co., St. Paul, Minn.). Re-elected members of the executive committee were Robert H. Baker (Dixie Sand & Gravel Corp., Chattanooga, Tenn.) and W. Agnew Bliss (Dravo Corp., Pittsburgh, Pa.). New members are John W. Murphy (Union Sand & Gravel Co., Spokane, Wash.) and R. E. Weaver (Lincoln Sand & Gravel Co., Lincoln, Ill.).

Address of President At the first formal session of the convention President T. E. Popplewell gave a general review of the past year, which set a record in volume and value of production, and of the accomplishments of the association. With its new laboratory, he said, the industry will get even better results from its unexcelled engineering staff. Mr. Popplewell stated that the association is in excellent financial condition and that its membership is at a record level. He also commented on future prospects, both as to business and legislative developments. With respect to the Taft-Hartley Act, he urged all producers to write to their congressmen, who are always glad to get opinions from their constituents.

Ahearn's Report In his annual report Vincent P. Ahearn, executive secretary, said that the 1947 production of sand and gravel totaled 287,659,000 tons, valued at $216,869,000, gains of 13 percent and 27 percent respectively, over 1946. Tentative estimates for 1948 indicate increases of about 15 percent in each category, with a volume of 310 to 315 million tons and a value of about 235 million dollars. There are, he said, no official figures on the production of ready-mixed concrete, but the volume for 1948 is estimated at about 25 million cu. yds., valued at about 250 million dollars, both well over the 1947 figures. The prospects for 1949 are good for both industries, since the actual physical volume of construction is expected to be about the same as in 1948.

Mr. Ahearn also commented on the excellent financial condition of both the National Sand and Gravel Assn. and the National Ready Mixed Concrete Assn. and noted the fact that both now have the largest membership in their history. The ready-mix group, he said, now represents about 80 percent of the total production of the industry. Mr. Ahearn then commented on the more adequate headquarters now occupied by the associations and the benefits derived therefrom. He also mentioned the yearbooks published describing each of the two associa-

• E. Murphy, Jim Murphy, Peter C. Gallagher, Hugh McCracken, and J. M. Gallagher—all of Gallagher Bros. Sand and Gravel Corp.

tions, and other publications and literature. Brief comments were also made on problems confronting the industries in connection with labor relations, zoning, stream pollution, car supply, etc. Producers are now cleaning cars at a cost to themselves of about 5 dollars each. Gondola cars, he said, will remain in short supply in 1949 because, while there was a net gain of 30,000 hopper cars in 1948, there was a net loss of 19,000 gondolas.

The regional meetings which were held in various parts of the country, in 1948, said Mr. Ahearn, made possible much closer contact with the industry and gave a better picture of actual conditions; he believes that these should be continued. After commenting on some of the important legislation before Congress he closed by saying that there will be a buyer's market in 1949 and that salesmanship is again important.

Walker's Report In making his report on engineering activities for the year, Stanton Walker, director of engineering, pointed out that for the first time this was a consolidated report for the two associations. Because of the overlapping of the associations in membership and in the work done for them, this is a logical procedure. Mr. Walker first gave a brief resume of the more or less routine work done during the year, including laboratory researches, publications, attendance and representation of the industry at various meetings of technical organizations, etc. He also described the third short course held at the University of Maryland, with an attendance of 78, as compared to 36 and 31 in the two preceding years.

Mr. Walker then commented on the revised specifications of the U. S. Corps of Engineers which have just been made known and which he believes should command the intense interest of every producer of sand and gravel and ready-mixed concrete. These new specifications, he said, introduce new problems for the producer who is bidding on work under the jurisdiction of the Corps; and he advised all producers to familiarize themselves with the details. The specifications have been partly responsible, he stated, together with the forthcoming move of laboratory facilities from present quarters to the new Engineering Building, for a reassessment of research facilities and objectives which is being under-

• Robert Mitchell, Consolidated Rock Products Co., and Colonel H. E. Peirce, Hall & Company, Ltd., London, who spoke briefly at the joint luncheon of the two associations.

• E. J. Halter (J. K. Davison & Bros.); C. A. Bickel (Iron City Sand & Gravel Co.); Joseph P. Lucas (Ohio River Sand & Gravel Co.); and A. T. Mershon (Iron City Sand & Gravel Co.).

•E. J. Nunan, H. N. Snyder, and Carlton Wicker—all of the Buffalo Slag Co., Inc., Buffalo, N. Y.

• J. P. Sadler (Southern Materials Co.); C. J. Shepherdson (Virginia Concrete Co.); and J. W. Roberts (So. Lightweight Aggregate Corp.).

taken by a committee from both associations.

Among the research projects described by Mr. Walker was one on the chemical activity between cement and aggregates. The importance of such reactions is rapidly becoming more apparent and the problem is whether to eliminate highly reactive aggregates from consideration or to use a low alkali cement or some pozzolanic material to inhibit harmful reactions. Work is already going on which may help to solve this problem. Renewed attention will, he said, also be paid to the subject of thermal characteristics of aggregates; air entrainment continues to be an important subject for further investigation. Mr. Walker emphasized that specifications for fine aggregate gradings are becoming more and more stringent and present increasingly difficult production problems. Also scheduled is work on test methods, bituminous mixtures, etc.

Construction Forecast No convention in recent years has been complete without an address by Thomas S. Holden, president of the F. W. Dodge Corp., who always has some interesting facts and vital statistics about the construction picture. This meeting was no exception and the subject, *Construction In a Free Society*, was a timely one. According to Mr. Holden, "the postwar inflationary boom is ending, important price adjustments are taking place, the buyer's market is returning, and the acute phase of housing shortage is about over."

Mr. Holden said that the contract trend of the past four months has partially confirmed the estimates made last November that 1949 would show a 7 percent decline in the physical volume of building but that the dollar volume would increase slightly due to further cost increases.

At considerable length Mr. Holden then presented facts to prove that this country is leading the world in the construction field, through the types of building materials it has developed, through the outstanding structures it has built, and in other ways. He made it plain that construction, as most other things, flourishes best in a free society and that any form of planned economy will have the same effect that it has had in Germany and other once free and progressive nations. He ended with a plea against any increases in taxes and government spending. American industry, he said, is in a very sound position but the big problem is to curb the excesses of government.

Winners of Safety Contests A feature of the initial session was the awarding of safety trophies to the winners of the safety contests held by both associations. The results of both contests have been reported in detail in these pages. The winner in the large plant class of the N.S.G.A. contest was the Memphis, Tenn., plant of the Marquette Cement Manufacturing Co. J. M. Dowdy, superintendent, accepted the trophy. The winner in the small plant class was the Crystal City, Mo., plant of the Pittsburgh Plate Glass Co. for which Freeman Ogle, superintendent, accepted the trophy. Both trophies in this contest are warded by *Rock Products*.

In the N.R.M.C.A. contest the safety trophies were presented by Harry F. Thomson, consulting engineer, St. Louis, who is chairman of the safety committee. The winner in the large plant class was Lubbock Building Products, Lubbock, Tex., and the award was received by J. E. Clark. The award in the small plant class was accepted by S. Norman Holland Jr., Pocahontas, Inc., Salisbury, Md. In this class ten plants had perfect records, and the award was made to the one with the greatest yardage.

Consolidated's Safety Program One of the outstanding features of this combined meeting was the description of the safety program of the Consolidated Rock Products Co., Los Angeles, Calif., given by Robert Mitchell, president of that company and past president of the N.S.G.A. He said that the first and most important requirement for an effective safety program is the sincere and active participation of the company's chief executive and his obvious interest in the welfare of the employees. It also requres individual effort and team work on the part of every other employee. Safety, said Mr. Mitchell, is everybody's business, especially that of the boss.

Mr. Mitchell then outlined some of the advantages of a consistent safety program and urged members not to delay in entering the association's contest, a move which would earn them not only the loyalty and good will of employees but would

• V. P. Ahearn (left) and A. R. Shiely present the safety trophy in the "large plant" division of the contest to J. M. Dowdy (right), of the Memphis Tenn., operation of Marquette Cement Mfg. Co.

NATIONAL SAND AND GRAVEL ASS'N
SAFETY TROPHY 1947
WON BY PITTSBURGH PLATE GLASS
CO., CRYSTAL CITY, MO. PLANT
PRESENTED BY ROCK PRODUCTS

• Mr. Shiely presents the "small plant" trophy to Freeman Ogle, representing the Crystal City, Mo., plant of the Pittsburgh Plate Glass Co.

also save money, as accidents not only involve direct expense but also tend to increase insurance rates. The good will of neighbors is also important, especially to plants being closed in by residential districts. Since entering the N.S.G.A. contest in 1936, said Mr. Mitchell, the company's plants have won four trophies, and the superintendent of the winning plant always gets a free trip to the convention to receive the award. The trophy won in the last contest, said Mr. Mitchell, was put on exhibition in the Los Angeles Chamber of Commerce and caused considerable favorable comment. The company's plants have not yet won an N.R.M.C.A. trophy but, said Mr. Mitchell, they will keep trying.

Consolidated has 850 employees and a full-time safety engineer. Safety efforts are divided into two categories: producing and distributing plants, and transportation. Every plant has a safety committee with the superintendent as chairman and this group meets every month with the safety engineer. Recommendations are written out which he must follow. The plant with the worst record each month is awarded a "white elephant" which the personnel try hard to get rid of.

In the transportation group traffic accidents are the real problem, according to Mr. Mitchell. Serious safety efforts were begun in 1935 when one serious accident caused a sharp increase in insurance rates. In that year the company's fleet of trucks was driven 1,600,000 mi. with an accident rate of 4.2 per 100,000 mi. In 1948 the record was 7,800,000 mi. with a rate of 1.53. The company's fleet is also entered in the fleet contest of the Los Angeles Safety Council, in which the average for all trucks in the area was 5.55 accidents per 100,000 mi.

• E. J. Goes, Koehring Co., and K. K. Kinsey, Concrete Materials & Construction Co.

• John R. Duble, Pit and Quarry, and T. A. Warner, Hendrick Manufacturing Co.

Building materials always come out second in this contest, which lists 15 different types of trucking, gasoline and oil trucks always being the winners.

Since 1935, Consolidated has given certificates to safe drivers and lapel buttons to those with over four years of safe driving—gold for no accidents and silver for those with unavoidable accidents only. An annual breakfast is given the company's 215 drivers at which the Los Angeles chief of police and safety officials speak. Traffic courts are also held each week at which each offender is given a chance to tell his story and is then judged. The company also conducts a health program, group insurance for accident and disability, Blue Cross hospitalization plan, etc., and gives annual physical examinations to all employees, including executives.

U. S. Engineers Program One of the principal speakers on the program, Lt. Gen. Raymond A. Wheeler, chief of the Corps of Engineers, U. S. Army, was unable to be present, but the *Construction Program of the Corps of Engineers* was ably described by Brig. Gen. G. J. Nold, North Atlantic Division engineer. The Corps is responsible for the administration and execution of river and harbor and flood control works and supervises military construction for the Army. Its construction program in 1949 and succeeding years is of great interest to the aggregates and ready-mixed concrete industries.

Gen. Nold said that the Corps of Engineers is an organization of builders and that it follows a long-standing policy of working closely with private industries, including the suppliers of construction materials. He described the important role which federal works have played in the development of this country and stressed the fact that even greater work will be done and must continue in order that our harbors and navigable waterways may be of maximum value to commerce and national defense. The importance of this work to flood control, the supplying of hydro-electric power, agriculture and industry in general was also stressed.

• Left: Cottrell Farrell (Easton Car & Construction Co.); R. C. Johnson (Simplicity Engineering Co.); L. C. Mosley (Marion Power Shovel Co.); and W. W. King (W. S. Tyler Co.).
• Below: E. R. Boate (Bacon-Pietsch Co.); I. F. Deister (Deister Machine Co.); and R. S. Hunt (Screen Equipment Co.).

As an example of the vast quantities of materials used in such work Gen. Nold cited the Bull Shoals Dam project now under construction on the White River in Arkansas. This massive concrete gravity structure will be 2,349 ft. long with a maximum height of 278 ft. and will cost about 76 million dollars. It will require 2,100,000 cu. yds. of concrete, involving the use of 1,800,000 bbls. of cement and 6,300,000 lbs. of reinforcing steel. In such projects, said the speaker, the chief aim of the Corps is to provide the best construction possible at a reasonable cost. With this primary objective in mind, he said, the Corps is establishing regional concrete and soils laboratories in or near Atlanta, Ga.; Dallas, Tex.; San Francisco, Calif.; Portland, Ore.; Omaha, Nebr.; and Cincinnati, O. In addition the Corps maintains a completely-equipped research laboratory at the Waterways Experiment Station in Vicksburg, Miss.

In describing the construction program of the Corps, Gen. Nold said that, while the tremendous military construction programs of the war period have been cut down to peacetime size, the civil works program, which was virtually suspended during the war, has been resumed at an accelerated rate. The appropriation for the fiscal year 1949 is $580,000,000 and the President has asked Congress for $734,000,000 for 1950, a new all-time high. Of this figure, if granted, about 620 million dollars woud be used for new construction, practically all of it for projects already under way. There are, he said, 61 river and harbor, and 157 flood control projects in the 1950 budget. He described some of these projects. Military construction funds for the current year total about 184 million dollars, of which a large part will be used for housing. In closing, Gen. Nold said that flood control projects up to June, 1948, had cost the federal government 483 million dollars, but that they had already saved more than 500 million dollars in damages prevented.

Aggregates for Civil Works *Requirements for Aggregates for Civil Works* was the heading under which J. R. Gilbert, chief, Concrete Branch, Office of Chief of Engineers, U. S. Army, outlined the policies and procedures used by the Corps in selecting aggregates for civil works construction. This subject is especially important to commercial aggregate producers at this time because much of the work is being done in areas where they are the logical suppliers of aggregates. Also, said Mr. Gilbert, there is too much misunderstanding about the aim of the Corps, which is to provide the best possible concrete with the aggregates economically available in the area of the job. With its seven laboratories in various parts of the country, the Corps is now able effectively to investigate in advance all the aggregates available for any job.

According to Mr. Gilbert, service records and other information on large structures show that much concrete is not satisfactory and that there is a variety of reasons for nondurability. Where service records are not available, laboratory tests form the only information. The Corps, he said, is interested chiefly in the quality of the aggregate, its gradation, particle shape and uniformity. Petrography is used because it gives a quick guide to possible suitable sources of aggregates. Other tests are made to determine the physical and chemical characteristics, the alkali reaction, the behavior of the material in concrete and the thermal properties of the material and the concrete. These tests, he said, are used as guides, but no aggregate is ever rejected on the basis of any one test.

The Corps designs concrete in such a way as to hold down the temperature rise and the thermal expansion of the aggregate, and the concrete must not vary too widely or it will affect the durability of the concrete and its resistance to repeated freezing and thawing. Thermal control, said Mr. Gilbert, may make it possible to do away with the necessity for internal cooling systems in large dams and other structures, and the many problems and expenses created by them. In smaller structures the thermal properties are not considered important, and specifications are much less rigid.

Mr. Gilbert said that nearly every known type of aggregate in this country is being used on the various jobs in progress, including stone sands. Where flat and elongated particles are excessive, this is combatted by reducing the percentage of this size in the mix; where the manufactured fine aggregate is harsh or where other undesirable characteristics exist, this is also usually overcome by adjusting the gradation. In describing some of the projects under way Mr. Gilbert pointed out that in several cases where the material is friable or where for some other reason there is excessive degradation in mixing, adjustments are being made which include an approach to 0 percent of minus-100-mesh material. The Corps is also attempting to solve many other construction problems. In closing, Mr. Gilbert asked for the full cooperation of the aggregates industries in making the best possible concrete to its own advantage and that of the public which pays for those structures.

European Paving Methods Under the heading *Requirements for Concrete Aggregates for Highway Construction,* F. H. Jackson, principal engineer of tests, Public Roads Administration, described the findings resulting from an extensive trip in 1947 during which he inspected highways in Germany and England. The quality of the German concrete, he said, is outstanding, and greater care is taken with subgrade construction. The Germans use a two-course method of construction, with one machine laying the bottom course and another machine right behind it laying the second course. This is possible because a very dry concrete is used. The concrete is then protected with sunshades and is kept moist for 21 days. Slides were used to illustrate the construction procedure and to show the completed pavements. In England, he said, no-slump concrete is also used with our mechanical equipment being used to compact the concrete to depths as great as 15 inches.

According to Mr. Jackson our paving concrete could be greatly improved by reducing the maximum size of the aggregate to 1 in. and by using better methods of compaction. We use mechanical methods because of the high labor cost, but this is sometimes at the expense of concrete quality. We use too much water and too much sand which finishes more easily but leaves a surface layer which does not hold up. Mr. Jackson recommended the use of lower slumps, which are possible if the concrete is suitably vibrated, and said that it would give a better concrete with less cement. Air entrainment, he said, is not the final answer but must be supplemented with better construction methods. Good highways are becoming more and more expensive to build and the public is entitled to enduring concrete in return.

Engineering and Highway Programs *Orderly Highway Programs Depend on Engineering Studies* was the theme of an address by G. Donald Kennedy, vice-president of the Automotive Safety Foundation. In order to demonstrate the importance to a nation of a planned highway program, the speaker compared the United States and its highway system with Turkey, which, in spite of being a much older country, is economically much younger, due largely to the inadequacy of its transportation system, which has held back its agricultural and industrial development. According to Mr. Kennedy, Turkey has now awakened to the importance of highways, and with assistance from this country, is learning the knack of planning and programming. A network of highways has been laid out in Turkey.

In the United States, said Mr. Kennedy, highways have played an important part in our economy, our high standard of living, and our ability to protect ourselves against an aggressor. Our highways have, he said, more than paid for their cost, but large sums will be necessary to maintain them, to expand them to keep up with the rapid increase of traffic, and to reduce the accident toll. The time has come, however, when year-to-year planning cannot handle this complex problem. The first step in the right direction, he said, was taken in the mid-30's when the U. S. Public Roads Administration, in co-operation with the states, initiated state-wide highway planning studies. Mr. Kennedy then described several state-wide highway engineering studies in which the Automotive Safety Foundation has participated in recent years.

Modern highway planning, said Mr. Kennedy, must weigh a variety of elements which in one way or another influence highway usage, the outlook of the people, the size of the highway program, and the legal action required to place the program in effect. A three-step plan of action has been developed:

1. Make the best use of all facilities through application of all traffic engineering devices and procedures, such as signs, signals and markings, and traffic routing.

2. Step up present capacity and safety with improvements of a minor nature, including stop-gap and permanent structures.

3. Adopt a long-range plan, founded on facts, to provide major traffic facilities.

Mr. Kennedy went into considerable detail on the classification of roads and streets, without which efficient management and equitable financing is impossible. He also described all of the various steps which must be taken before a long-term program can be developed. In closing, he said that the United States has the best highway system and the best transportation in the world due to our planning, but that we must now do an even better job.

• Directors of the Manufacturers' Division of N.S.G.A. and N.R.M.C.A. Standing (left to right): M. R. Butler (Butler Bin Co.); E. M. Heuston (Bucyrus-Erie Co.); C. B. Laird (Eagle Iron Works); Chairman A. E. Conover (Robins Conveyor Division, Hewitt-Robins, Inc.); W. W. King (W. S. Tyler Co.); R. P. McKendrick (Blaw-Knox Division); R. McLean (Jaeger Machine Co.). Front row: L. C. Mosley (Marion Power Shovel Co.); E. J. Goes (Koehring Co.); R. C. Johnson (Simplicity Engineering Co.); J. C. McLanahan (McLanahan & Stone Corp.).

New York State Highway Program *Meeting the Highway Challenge* was the appropriate title given by B. D. Tallamy, superintendent, of Public Works, State of New York, for his address on the New York state highway program. He said that one of our problems in maintaining and improving our highway system is selling the public on the fact that highways are vital to our high standard of living, to our businesses, and even to our free-time recreation, and also proving that they are expensive. He pointed out that New York entered the depression with the best highway system in the country but that, during the depression, little money was spent on them and highway funds were diverted for other purposes. The result was that when we entered World War II the system was obsolete and it is now in poor condition. According to Mr. Tallamy, of 14,200 miles of state highway in New York a total of over 5000 miles is over 20 yrs. old, and 5800 miles is 10 to 20 yrs. old, much of it approaching dangerous condition. Some of the highways need to be replaced, nearly all need widening and straightening, and new ones need to be built. The delay in providing adequate roads, he said, is leading to drastic restrictions which take away the advantages of motor vehicles.

Mr. Tallamy said that it would cost 143 million dollars per year for 14 years, or a total of about 2 billion dollars, to make the New York highway system adequate. It would then cost 80 million dollars annually to keep it that way. All other states, he said, have the same problem in varying degrees. The post-war construction program under way in New York has given that state an early start, and over 200 million dollars' worth of work is already completed or under contract. Contractors, he said, are showing an increasing interest in bidding. In closing, Mr. Tallamy emphasized the importance to highway construction of high-grade materials at a reasonable cost.

Bituminous Construction E. F. Kelley, Public Roads Administration, discussed some of the problems of bituminous road construction related to aggregates. The subject was introduced with a brief description of the types of bituminous materials which are commonly used in highway work and

the more important types of bituminous surfaces. Mr. Kelley then referred to some of the tests used to measure such properties as the quality of coarse aggregate and resistance to stripping. The static immersion test, he said, is a stripping test applicable only to coarse aggregates, while the immersion-compression test applies to the paving mixture as a whole.

The detrimental effect of stripping, Mr. Kelley stated, has led to the development of the so-called antistripping agents which make it possible to coat wet or damp aggregates with bituminous material and to increase the adhesion of the film to aggregates in the presence of water. He added that such agents seem to be most effective when used with cutback asphalts which are heated only moderately or not at all.

The grading and angularity of aggregates are also of prime importance, as they affect density and stability, Mr. Kelley said. He pointed out that the presence of so many variables is largely responsible for the lack of uniformity in specification requirements. Some of these, he stated in conclusion, can be eliminated by a wider dissemination of existing information and the development of new information.

Soft Particles In the course of a general discussion of specification requirements, E. K. Davison presented a suggested method of analyzing crusher performance in the elimination of soft particles, using a modification of the familiar grading analysis graph. The ordinate of the graph shows, as is customary, the cumulative percentage of weight passing the sieves. However, instead of plotting sieve opening directly on the horizontal axis, the percentage of maximum sieve opening of the crusher feed is used. By using this sort of graph, crushers using feeds of different maximum sizes can be readily compared on the same chart.

For a given gravel sample, a separation is made between soft and hard particles, and separate grading curves are plotted. Corrective steps are then determined by study of the graph. If the soft particles, for example, lie on the coarse side of the chart, a finer feed will increase the proportion of hard particles in the feed and consequently in the product. Another remedy might be to recrush the product in the same crusher, taking advantage of the fact that the reduction ratios for soft particles are usually greater than for hard particles. This would push the curve for the soft particles farther toward the fine side of the graph, making it possible to separate many of the soft particles by sizing. The analysis, in any case, often points to some size in the coarse aggregate where effective soft particle elimination can be made.

Exerting more crusher force by higher speeds or closer settings will also push the soft product curve to the fine side of the grading graph. In this case the chart analysis method provides a convenient means of comparing the performances of different crushers.

Specification Requirements Stanton Walker, director of engineering, spoke briefly about the proposed "ideal" specification of the Corps of Engineers. He said that in analyzing half of 108 sands which passed the present Corps of Engineers specification, none was found which passed the proposed specification. He believes that the new specification is offered more as a goal to shoot at than as a practical working requirement. The proposed limits are as follows:

Sieve No.	*Percentage Passing*
4-16	25±3
16-30	25±5
30-100	42±5
100-pan	8±2

Employer-Employee Relations In an evening session on the first day of the joint convention, Vincent P. Ahearn, Charles A. Horsky and Kenneth E. Tobin Jr. acted as moderators for an open forum discussion of employer-employee relations. By way of introduction, Mr. Ahearn pointed out that the Bay Ridge Decision is of considerable interest to both industries (sand and gravel and ready-mixed concrete) because in certain instances it requires the payment of overtime on overtime. Some of the more drastic effects of the decision, he stated, have fortunately been modified by subsequent rulings of the Wage and Hour Administrator, and the requirements are now fairly explicit and not too difficult to meet.

To illustrate how the decision affects the computation of wages, Mr. Tobin worked out several typical examples, based on an hourly rate of $1.00, with time and a half over 40 hours and double time on Sunday. In the first example, for a work week beginning on Thursday, it was shown that the wage due under the contract for six 8-hr. days (no work on Sunday) was $52.00, whereas the computed wage under present law was $56.32. Based on the contract, the wage was $48.00 (for straight time) plus $4.00 (for overtime). The change effected by the Bay Ridge Decision required payment based on a computed regular rate (for overtime) of $1.08 per hour ($52.00 ÷ 48 hrs.), or $52.00 ÷ 8 ($1.08 ÷ 2) = $56.32.

In the second example it was shown that had the work week commenced at 12:00 a.m. on Monday, the amount due under the Wage and Hour Act would have been $52.00, just as it was under the contract. Other examples were used to show the effect of a holiday within the work week. It was pointed out that the distinctions generally hinge on whether or not premium pay is for working undesirable hours. If it is, such premium pay must be included in computing each employee's regular rate in order to determine the amount of overtime pay actually due. If the premium pay is for overtime only, it need not be included in computing the regular rate of pay.

Another point brought out in connection with computing regular rates was that insurance premiums paid by the employer need not be included. This was also said to apply to bonuses paid out at Christmas or the end of the year, provided such payments are discretionary with the employer. It is of the utmost importance, Mr. Ahearn said in concluding the discussion, for employers to begin the work week on Monday regardless of the day of the week in which actual payment is made.

Mr. Horsky discussed briefly some of the provisions which the Truman Administration would like to incorporate into a law repealing the Taft-Hartley Act and reinstating the Wagner Act with certain amendments. He made it clear, however, that it is much too soon to do more than guess at the ultimate form of the new law. Some fair possibilities: no communist oath; no union obligation to bargain collectively; no ban on political contributions by unions; limitation on secondary boycott ban to those instances in which the action is taken to compel other employers not to recognize a certified union.

Air Entrainment *Effect of Air Entrainment on Resistance to Freezing and Thawing of Concrete Made with Questionable Aggregate* was the title of a paper presented by Fred F. Bartel, assistant director of engineering,

National Sand & Gravel Assn. Mr. Bartel summarized data from a series of freezing and thawing tests in which aggregate was the principal variable. Five sands ranging in soundness from excellent to poor and six miscellaneous coarse aggregates were used in both normal and air-entraining concrete. The effects of freezing and thawing were determined at intervals during the test by dynamic measurement of the modulus of elasticity of the concrete.

For the five sands studied, air-entraining concrete showed uniformly high resistance to freezing and thawing regardless of the sand used. In normal, air-free concrete, however, results varied from excellent to poor, depending on the sand used. Although the entrainment of air improved the resistance of concrete made with the six coarse aggregates studied, not all air-entraining concrete showed the same order of performance. It was Mr. Bartel's conclusion that the effects of air-entrainment in relation to coarse aggregates must be studied for each aggregate.

Similar tests were made of normal and air-entraining concrete made with five Type I cements. Normal concretes showed wide variations in resistance, whereas the air-entraining group showed uniformly high resistance for all cements used. In the net, all the tests seemed to indicate that it is the entrained air, and not the admixture *per se*, which improves resistance to freezing and thawing. It was found that even quite small variations in the air content of normal concrete may significantly affect durability.

Railroad Dilemma The sand and gravel industry and the railroad industry have much in common, asserted M. W. Clement, president of the Pennsylvania Railroad Co., at the joint luncheon of the two associations. Both deal in low-cost commodities merchandised in large volume. At this point, however, a big difference comes into the picture. When wages and other costs increase, the sand and gravel industry raises its prices and the railroads pay the new price for their needs. In contrast with this quite natural reaction, he said, the railroads, closely regulated, must ask permission to adjust prices to meet similar increased costs. When this comes to pass, the railroads almost invariably face the opposition of the sand and gravel industry.

"We, as a rigidly regulated industry," said Mr. Clement in pointing up the paradox, "are only trying to get authority to take exactly the same measures that you, as free agents, take of your own volition, and we are faced with exactly the same economic necessities as impel your action". The dilemma of the railroads, he said, should have the sympathetic support of the sand and gravel industry to help bring and maintain the railroads on a sound economic basis.

When sand and gravel representatives appear before the commissions regulating railroad commerce and ask for lower rates, they are in effect asking that the railroads grant subsidies to them so that they can supply materials more profitably. In turn, these materials go into roads, maintained out of public funds, which provide subsidized competition against the railroads.

There is, according to Mr. Clement, a pronounced tendency today for the government to dominate the railroads completely. If continued, this tendency will result in absolute government ownership and operation of the transportation and communication systems. This is socialism, Mr. Clement said, and "socialism is but a transitional phase between a free economy under representative form of government and the totalitarian state, under which *all* natural resources are under control of the government and the planners".

More Cement

(*From page* 74)

sumed in each shot. The stone is loaded into narrow-gauge steel cars with a new Marion 2½ cu. yd. electric shovel. Electric power for both shovels is bought from the Ohio Power Co. and stepped down from 2300 to 440 volts in a company-owned station located in the quarry.

The stone-filled cars are pulled the 2½ miles from quarry to plant by 20-ton Plymouth gasoline locomotives, hoisted up a short incline, and unloaded into a large hopper. From the hopper the stone falls upon a chain feeder which charges a variable speed d.-c. feeder controlling the movement of stone into a Jeffrey 54- by 48-in. hammermill. Here the pit run rock is reduced in one operation to minus 3-in. size. To date it has been necessary to turn the hammers only once every season.

The minus 3-in. stone passes from the hammermill into coal fired rotary dryers where moisture content is reduced, under normal conditions, to less than 1 percent. These are single shell counterflow units. Stone in excess of requirements for daily operations is sent to a covered raw storage area and reclaimed with an overhead crane when needed.

There is little or no dust problem connected with the raw storage since the shale is stored before crushing. Because of its high friability the shale is practically pulverized with one pass through the Jeffrey hammermill. It is dried in a separate rotary dryer.

Secondary reduction is handled in two Jeffrey hammermills with grate bars set at 1-in. spacings.

Both shale, and pulverized stone are sent to six small steel silos, three for stone and three for shale, which proceed the poidometers. Only enough material is carried in these surge bins to handle a single day's production. In the event of a breakdown in the secondary crushing department, the company keeps enough spare parts in stock to rebuild a mill completely. Raw grinding is handled in three Allis-Chalmers No. 724 tube mills, each in closed circuit with Raymond air separators. The fine material from the air separators, 99 percent passing 100-mesh, is conveyed to blending tanks and blended by recirculation.

There is no doubt that the increased cement-production capacity at Middle Branch will redound to the more complete satisfaction of Diamond customers. The question in our minds when we visited this plant was: Wasn't the expense of the additional capacity a highly speculative investment in view of the impending Supreme Court cement decision? When we put the question to R. D. Raff, president of the company, his answer rather surprised us. The tremendous increase in freight rates, he declared, has just as effectively limited the boundaries within which this company can compete as did the cement decision.

Other personalities at Diamond Portland Cement who were most cooperative and helpful on our visit were: E. H. Raff, vice-president; E. R. Evans, plant manager; and Anthony Turk, chief engineer.

Native Sulphur Output Up For 1948 and December

The domestic sulphur industry produced 438,527 long tons of native sulphur during December, to set a new record for a month's production, according to reports to the U. S. Bureau of Mines. Total production for the year 1948 was 4,869,211 long tons, which was also a record—exceeding by nearly 10 percent the previous record year of 1947.

Producers held stocks of 3,225,014 long tons at the end of the year—a decrease of less than 5 percent from stocks at the beginning of 1948.

• Scene at the greeting luncheon during the Agricultural Limestone Institute's annual convention at Chicago's Edgewater Beach Hotel.

The A.L.I.'s Fourth

Krause Accepts Chairmanship Of Institute for Second Term

ON THE SPOT

THE Agricultural Limestone Institute held its 4th annual convention in Chicago's spacious Edgewater Beach Hotel on February 21 and 22. More than 200 members, equipment representatives, and guests registered for the two-day meeting. In addition to the highly interesting business sessions which afforded members an excellent opportunity to discuss and to hear discussed problems of marketing, pricing, and operating, there was a fine program of entertainment; and, of course, there was also time for informal get-togethers.

The membership re-elected the following: Horace C. Krause, president of Columbia Quarry Company, chairman; Henry A. Huschke, managing director; and J. R. Boyd, secretary-treasurer. Russell Rarey, Marble Cliff Quarries Company, Columbus, O., will continue to represent the National Crushed Stone Association on the executive committee of the institute.

In his annual report to the members, Mr. Huschke commented on the progress the division has made since the 1948 meeting. Throughout 1948 the institute sent out 28 communications to its members on legislative matters in Washington or requesting help in connection therewith. In addition, four statements on the institute's position were presented to four congressional committees, and much other work was done.

Federal Legislation The laws affecting the agstone business are multitudinous, said Charles A. Horsky, attorney and well-known authority on labor legislation. The time is approaching when every businessman must be a lawyer and every lawyer must be a businessman. In his message to members of the Agricultural Limestone Institute Mr. Horsky confined his comments to two increasingly important fields of federal legislation—labor relations and pricing.

Today there is complete confusion in both fields. At the moment the only certain outgrowth of the confusion is that the Congress will in this session amend both the Taft-Hartley law and the Wage-Hour law. What form the new legislation will take is as yet a matter of pure conjecture, depending solely upon political considerations. Everyone admits, however, that there is certain to be a change in this session of the Congress.

Mr. Horsky outlined the historical background of the laws which affect the present pricing confusion. Since 1848, he said, every major political party has had an anti-monopoly plank in its platform. By 1890 Congress had passed the Sherman Act, which was intended to stop predatory practices among big business. This was the first major step taken by our government to declare monopolies illegal; it was enforced, in this act, by a treble-damage clause in favor of the injured third party. It wasn't until 1911, however, that the Supreme Court of the United States had an opportunity to clarify the issues raised by this law. In that year the Supreme Court decided in cases involving American Tobacco Company and Standard Oil Company that there were no monopolistic practices that came within the intent of the law unless it could be proved that there was an unreasonable restraint of trade.

Two more modern laws, the Clayton Act and the Robinson-Patman Act have extended the powers of

• The A.L.I. board of directors in session at the Edgewater Beach Hotel, Chicago, on February 22.

the government to break up monopolies. The Clayton Act prevents monopolies from ever coming into existence, while the Robinson-Patman Act makes illegal those particular symptoms or practices which the government, through the Federal Trade Commission, says indicate monopolies. Into this act has been written what business can or cannot do when it buys or sells its products. There has been a question, said Mr. Horsky, whether or not agricultural limestone producers are engaged in interstate commerce, which would bring them under the provisions of the Robinson-Patman Act. Recent court decisions have held that, irrespective of the fact that you don't sell across state lines, you still come within the act if you buy from across state lines. It is readily seen, therefore, that most agstone producers come within the scope of this act and, further, are affected by the decision of the Supreme Court handed down in the recent cement case.

The primary problem arising out of the cement case is: How can you sell your goods legally? Before this decision there were five general systems of pricing—(1) uniform sales price (e.g., gum, stamps, etc.); (2) zone pricing (i.e., everyone in a certain zone buys the goods at a single price); (3) single basing point system (e.g., Pittsburgh basing point for steel); (4) multiple basing point system involved in the cement decision; (5) f.o.b. factory price, plus freight, but meeting all prices of competitors.

At this point no lawyer can tell you whether any of these five systems is legal; moreover, if you decide to continue your present pricing policy until the FTC objects, you will be open to treble damages from any one of your customers.

It is well settled that conspiracy to fix prices is illegal and has been since 1890. The problem today, however, is to determine how much proof is

• Mr. and Mrs. Horace C. Krause, Columbia Quarry Co., St. Louis, Mo. Mr. Krause was re-elected chairman of the institute.

needed to establish conspiracy. Does the mere fact that prices are identical fix conspiracy? The FTC has interpreted both the Robinson-Patman and the Clayton Acts, and has been backed up by the recent Supreme Court rulings to mean that price is not a matter of dollars and cents to the purchaser, but rather that amount which the manufacturer gets at his factory. If as a case in point you have uniform prices throughout the United States, says the FTC, the manufacturer is actually getting a good many different prices.

Most vicious of all FTC theories is the one which has been labeled "the theory of conscious parallel action." This theory, when applied, means that if your pricing policies are the same as your neighbors, even when there is no agreement, it is illegal.

The FTC has taken the cement decision as a blanket approval of all the theories espoused by the commission. So vigorous and so unanimous was industry's denunciation of this interpretation of the cement decision by the commission that the Congress will attempt to clarify the controversy through a bill now being prepared by the Johnson committee (formerly the Capehart committee). This bill states that: (1) uniform prices are legal; (2) zone prices are legal; (3) this law does not necessarily limit the conspiracy clause of previous anti-trust laws; and (4) it is legal to meet competition anywhere, at any time.

Conservation Program In 1948 our people ate 12 percent more food per capita than in the years 1935 to 1939 and still they had less of some foods than they actually wanted, asserted Albert J. Loveland, Undersecretary of Agriculture. From the standpoint of the American consumers' need and desire, therefore, continued agricultural abundance is necessary to the health and prosperity of this nation. In addition, American food has played an indispensable role in the postwar rehabilitation of the world. Last year we exported about 20 million tons of food to the peoples of the rest of the world.

During the depths of the last depression, our farmers spread only 1½ million tons of lime. In 1935, a more nearly normal year, they spread about 3 million tons. By 1936, the agricultural conservation program was started and the use of lime doubled and then tripled. In 1947 it was 10 times the 1935 consumption, or 4 times the 1935-39 average.

Under the A.C.P., lime has been spread on more than 100 million acres, amounting to about 186,000,000 tons. According to estimates made by the department, said Mr. Loveland, the total requirements for lime necessary to keep our acres in proper balance amounts to 70 million tons a year. During the best year (1947) so far, only slightly more than 30 million tons of lime were sold.

In the event of hard times farmers

• Mr. and Mrs. John H. Riddle, Riddle Quarries, Inc., Marion, Kan.

• Mr. and Mrs. B. G. Lindenfeld, Terminal Materials Co., St. Joseph, Mich.

• Mr. and Mrs. C. A. Sanborn, Baughman Mfg. Co., Jerseyville, Ill.

• Three gentlemen from Iowa: Paul Nauman, Dubuque Stone Products Co.; Clint Allen, executive-secretary of the Iowa Agstone Association; and Bill Sharpe, Dillon, Sharpe & Co., Columbus Junction.

might cut down somewhat on the use of lime and fertilizer. And this, of course, said Mr. Loveland, illustrates the importance of farm prosperity to the agstone industry.

Business, Technical Sessions Jules E. Jenkins, Vibration Measurement Engineers, Chicago, Ill., set the Monday afternoon session in motion with a down-to-earth discussion on vibration problems associated with blasting.

Recommending the use of U. S. Bureau of Mines bulletins and tables in conjunction with thorough analysis of terrain factors, he showed convincing reasons for employing the scientific-type approach, rather than viewing blasting problems on the basis of complaints. In parallel with the above he explained the use of the "basic grid system", which is a series of seismographic tests to indicate directions from which complaints might come. The "fast delay method", utilizing caps or mechanical switches, which has proved successful in reducing the amount of secondary blasting, was briefly considered.

Throughout his discussion, Mr. Jenkins pointed to the necessity for producers to fortify themselves with carefully calculated data as a solution to legal problems, damage claims and nuisance complaints arising from blasting operations.

Crushing and Grinding was the subject of the second discussion, led by E. Lee Heidenreich Jr., consulting engineer, Newburgh, N. Y. While his talk was aimed primarily at the central section of the country, his treatment of the subject made it of vital interest to producers from all locations.

Pointing out that crushing and grinding costs are an important part of overall costs, he urged the practice of keeping close records on these operations, relative to hours, tonnage and weather effects on output. He cited comparative figures showing that in wet weather slow-downs in crushing and grinding result in cost increases as high as 90 cents per ton over an equivalent dry-weather period.

As a means of compensating for this, Mr. Heidenreich recommended that the primary crusher capacity be double plant needs. He was high in his opinion of single roll crushers which, he stated, handle stone almost equally well regardless of wet or dry weather conditions at the rate of 50 to 70 tons per hour. Alluding to "impact" crushing, he predicted increase in its use in the near future. The use of dryers, to be by-passed when not needed, was also brought under consideration.

Last topic on the day's agenda was *Screening*. Divided for discussion purposes as *Moist Materials* and *Dry Materials,* the first phase was guided by C. E. Hogeboom, Consumers Company, Chicago, Ill., and the second by Joe C. Lawrence, general manager of Liberty Limestone Corporation, Buchanan, Va.

Mr. Hogeboom advised thorough study of the moisture content and size of the material to be screened and the required production rate. Referring to difficulties, such as adhesion of fines to screen openings and balling of fines, encountered in handling moist materials, he outlined a number of solutions to this problem, including: careful selection of the screen to be used, study of the number of decks required and taking liberal advantage of the manufacturer's services.

Drawing on personal experience, Mr. Lawrence spoke briefly of the dust problem created in handling dry materials and then took up the subject of screen cloth troubles. In connection with this topic, he showed the advantages of the oblong mesh over the square mesh in doing a better job of passing fines to specification.

How We Increased the Use of Agricultural Limestone in Our County was the title of an interesting talk by J. B. Turner, Fayette County farm adviser, dealing with problems in the promotion and use of agricultural limestone in Fayette County, Ill. Educational slides, designed for both farmers and businessmen, were used to show how the job was accomplished and also the response of various crops, such as soybean and wheat, to liming.

The story of this highly successful cooperative venture was a pleasant revelation of accomplishments obtained through spirited community teamwork. Along with this idea Mr. Turner called attention to a nation's dependency on its soil. Too many people, he said, look only to financial return in farming and seem to think that soil never wears out. The importance of soil preservation at this time was emphasized in his statement that the same number of farmers are today feeding 10 million more people than they did 10 years ago.

Dr. H. R. Bray, professor of soil fertility, University of Illinois, delivered a very erudite paper, *The New Concept of Elastic Soil Fertility as It Affects Limestone Use.* He described the nature of soil fertility and by what means it is measured. Revealing that humus and clay are the two elements responsible for soil acidity, he outlined the connection of soil acidity and liming to the general fertility of the soil.

The extent to which crop yields may be predicted on the basis of known facts about the soil being farmed was stressed as particularly important by Dr. Bray. He pointed out that the scale of productivity varies for each crop and that the less fertile the soil the greater the difference in comparative yield as the result of using fertilizer. The size of yield, he concluded, is determined by the condition of the soil and the season.

Highlighting the Tuesday afternoon session was the address, *Our Experience in Promoting Agricultural Limestone* by W. F. Sharpe,

(*Continued on page* 90)

Outstanding Speakers Address 77th A.I.M.E. Meeting in San Francisco

another ON THE SPOT report

NEARLY 2,000 persons closely identified with the mineral industries converged upon San Francisco during the week of February 13-17 for the 77th annual meeting of the American Institute of Mining & Metallurgical Engineers.

Convention headquarters were in the Fairmont Hotel, but so many separate technical sessions were programmed—66 in all—that attendance spilled over into the meeting rooms of a half dozen other hotels in the Golden Gate City to accommodate all. Approximately 150 technical papers were presented.

By HARRY F. UTLEY

From outside the industries chiefly concerned, delegates and their guests heard talks by several noted personages, including California's Governor Earl Warren and Dr. Robert Gordon Sproul, president of the University of California. Luncheons, supper dances, and stag dinners were numerous and gay throughout the week.

Presiding over the opening sessions was A.I.M.E. President W. E. Wrather, director of the U. S. Geological Survey. He soon passed the gavel to the incoming president, Lewis E. Young, prominent consulting mining engineer of Pittsburgh, who will direct Institute activities through 1949. S. J. Swainson (American Cyanamid Co., Stamford, Conn.,) is the new chairman of the Industrial Minerals Division.

The general convention chairman was William Wallace Mein Jr., well known as vice-president of the Calaveras Cement Co. of the host city of San Francisco.

INDUSTRIAL MINERALS

The seven or eight divisions held concurrent sessions during the 5-day gathering, but chief interest of the men engaged in the production and processing of nonmetallic minerals was contained in those devoted to industrial minerals and mineral beneficiation.

Reactive Aggregate Thought - provoking and of paramount interest to aggregates producers was the technical paper entitled *Reactive Aggregate in Concrete* by R. F. Blanks and Roger Rhoades of the U. S. Bureau of Reclamation. It was based on the premise that, when aggregates are mixed with cement to make concrete, the ingredients interact in complex ways, some beneficial and some detrimental. In the view of this reactivity it was declared important in selecting aggregate materials to ascertain that their reactions will be compatible with those of the cement, to the end that the concrete will be serviceable and durable.

Dr. L. E. Young, newly-elected president of the American Institute of Mining and Metallurgical Engineers.

Physical reactions of aggregate were shown to be related (1) to their strength and elastic properties, (2) to their capacity for expansion and contraction under conditions of wetting and drying or temperature change; (3) to their response to freezing and thawing; or (4) to the stress-strain relationships in the structure. Chemical reactivity results from action of the water such as leaching, dissolution and atmospheric action which may cause oxidation, carbonation or hydration. Autogenous processes involving sulphate attack, alkali reaction and other self-generating activity may also result.

The alkali reaction is caused by attack on certain susceptible kinds of aggregates by the excess alkali in high-alkali cement and, in the opinion of the authors, is the most important kind of cement-aggregate reactivity and the most deleterious. In the process, silica is dissolved from the aggregate in the form of silica gel. The gel has the property of absorbing water osmotically and expanding with the generation of high pressure. These pressures cause development of microfractures throughout the body of the concrete and enlarge to sizable pattern cracks on the surface. The elastic modulus of the concrete is reduced and the concrete is made permeable and hence vulnerable to freezing and thawing and other kinds of deterioration. Coincidentally, the concrete expands and frequently causes severe structural distress.

Research, the authors point out, has proved that rocks composed essentially of silica, such as opal and chalcedomy, are particularly susceptible. Rhyolites and cherts are also highly reactive, as are some phyllites which have caused deterioration in structures in California and Virginia.

These reactive rocks may be used with a cement of low-alkali content, however. For practical purposes the Bureau has found that an alkali content of 0.6 percent or less is permissible for aggregates except those proved to be extremely reactive. When the alkali content exceeds 0.6 percent, such cement can be used safely only in conjunction with definitely nonreactive aggregates.

In summary, the paper indicated that best assurance against concrete deterioration was to make sure that the cement is low-alkali or that the aggregates are nonreactive. Tests to determine the reactivity of aggregates include: (1) petrographic examination which will lead to the identification of any reactive constituents; (2) mortar-bar tests by which a given aggregate is mixed with high-alkali cement and observed from direct expansion; (3) a chemical test by which the aggregate materials in powdered form are subjected to an alkaline solution. In the latter test, the amount of the silica leached from the powdered rock is measured, as well as the alkalinity change in the solution itself.

It has been found that certain pozzolans can replace 20 to 40 percent of the cement and effectively prevent or reduce the alkali reaction, thus permitting the use of aggregates of

moderate reactivity and cements of moderate alkali content.

Lightweight Aggregates Indicative of the continued interest in lightweight aggregates was the appearance at the Industrial Minerals Division sessions of a half dozen authorities who presented papers outlining various phases of the subject.

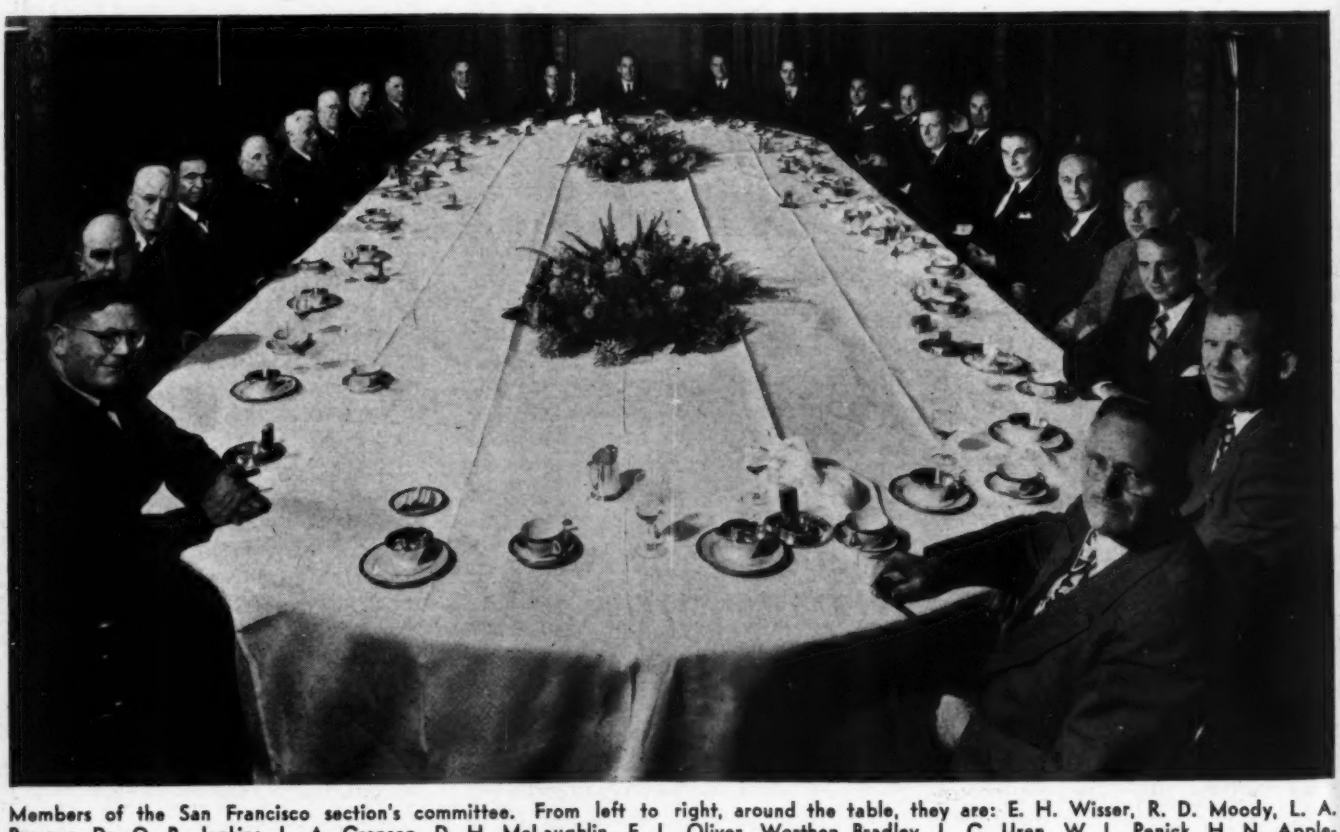
Of broad interest was a paper entitled *Recent Developments in the Manufacture of Lightweight Aggregates,* by John E. Conley of the U. S. Bureau of Mines. The paper was in the nature of a review of presently available lightweights, which Dr. Conley divided into two groups—the extreme lightweights, such as exfoliated vermiculite and expanded perlite, weighing from 3 to 25 lbs. per cu. ft., and those somewhat heavier, in the range from 30 to 70 lbs. per cu. ft., which are capable of yielding concrete with 28-day compressive strengths up to 5,000 lbs. He reported a tremendous advance in the mining and utilization of natural aggregates such as pumice, scoria and diatomite. This growth has been largely confined to the West, where they occur in abundance and are relatively cheap, since they require little processing. Expanded and foamed slags, as well as bloated shales and clays, continue in good demand and there has been

William Wallace Mein, Jr., vice-president of the Calaveras Cement Company, was general convention chairman heading the committee on arrangements.

increased interest in sintered aggregates following recent exploitation of efficient machines for their production.

The huge dumps of waste Pennsylvania slate, many of which have accumulated and grown in size over a 100-yr. period, offer a raw material that bids fair to provide part of our lightweight aggregate needs in the future, in the opinion of E. L. Henry of Pennsylvania State College. Mr. Henry and C. H. Moore, Jr., National Lead Co., collaborated in a paper entitled *Technical Utilization of Waste Slate as a Lightweight Aggregate for Concrete.* Pilot-plant results reveal that the slate expands up to 5 times in volume when subjected to about 1,150 deg. F. and the resultant aggregate has been used in making concrete specimens of high strength and low permeability. Good durability was also reported based on A.S.T.M. Sodium Sulphate Tests for Soundness. In Mr. Henry's opinion, slate aggregates, when properly processed, will compare very favorably with any other type of lightweight now available.

Aspects of the lightweight picture in three Western states were revealed in another series of papers. *The Lightweight Aggregate Industry in Oregon,* presented by N. S. Wagner and R. S. Mason of the state's geological department, pointed to the abundance of pumice deposits of good quality. Nine operators are now said to be processing the material within the state, turning out a total of about 35,000 tons in 1948. The new Dantore perlite plant (see article in this issue) and Northwest Aggregates' expanded-shale plant, both near Portland, were acclaimed as modern additions to the source of supply. Volcanic cinders and diato-



Members of the San Francisco section's committee. From left to right, around the table, they are: E. H. Wisser, R. D. Moody, L. A. Parsons, Dr. O. P. Jenkins, L. A. Cranson, D. H. McLaughlin, E. L. Oliver, Worthen Bradley, L. C. Uren, W. L. Penick, H. N. Appleton, W. W. Mein Jr., W. C. Collyer, G. H. Playter, Gilfry Ward, H. A. Sawin, G. I. Gould, P. R. Bradley Jr., R. M. Searls, H. N. How, S. H. Williston, R. E. Byler, Bernard York and L. B. Wright.

mite are also widely available in Oregon but have been developed only on a small scale.

The production of pumice as an aggregate has grown to be a million-dollar industry in New Mexico in the space of three or four years, according to a paper authored by E. C. Anderson of the New Mexico Bureau of Mines. Deposits of exceptional quality occur widely west of the Rio Grande. Development on an even greater scale was forecast if the state succeeds in its present efforts to obtain relief from high freight rates eastward.

Pumice and perlite occur so widely in California that the state should never lack for good lightweight aggregates, according to a geologic study made by Chas. W. Chesterman of the California Division of Mines, and reported by the author at the meeting. Both materials are associated with tertiary volcanic rocks and often occur in juxtaposition. High-grade perlite of the type sought by "popping" plants occurs as lenses in these lava flows for the most part, Mr. Chesterman declared.

Some of the shrouds of mystery which have cloaked production techniques in the infant perlite industry were drawn aside in one of the most informative technical papers ever presented on the subject. The title, *Comparative Furnace Designs for the Expansion of Perlite* was by John B. Murdock, president of the Perlite Corp., Phoeniz, Ariz.

Mr. Murdock prefaced his report with an analysis of the theory of why perlite "pops" when heated. There are four variables involved, in his opinion. These include (1) the nature of the perlite rock used, (2) the heating time required to get the particle up to its highest temperature, (3) particle size, and (4) the maximum temperature reached by the particle.

Perlites are classified in the range from "lively" to "dead" to signify their popping qualities. This is dependent in large part, apparently, on the amount of combined water locked into the rock since it took form as a volcanic glass early in geologic history. Prospectors test this property in the field with a gasoline blow-torch.

The author analyzed 8 different types of furnaces that have been used by producers. These include the following: horizontal flash horizontal flash with preheater, vertical stationary, short co-current rotary, long co-current rotary, counter-current rotary, indirect-fired rotary, and multiple hearth.

In evaluating the performance of the eight types, Mr. Murdock based his deductions on nine separate factors: fuel efficiency, freedom from waste-dust production, production-to-cost ratio, ability to make light plus-8-mesh product, ability to make light minus-8-mesh product, ability to expand low-temperature ores, ability to expand high-temperature ores, ability to avoid fusion on furnace walls, and control over size distribution and degree of expansion.

Unfortunately, no single furnace type is able to do an exceptional job in meeting all these requirements. Fuel efficiency, Mr. Murdock finds, together with low dust production, is best in the counter-current kiln and the vertical-hearth types. The simple horizontal flash furnace is the most economical in production based on initial cost. The stationary types using flash heat have proved best for popping fine (minus-8-mesh) perlite, while the rotary kilns apparently turn out a better coarse (plus 8-mesh) product. High-temperature ores seem to expand better in stationary furnaces while, in general, the revolving types do a better job on low temperature rock.

Cement Industry A preview of the tremendous research program projected by the Portland Cement Assn. for the future was patterned by A. Allen Bates, research director. He dwelt at some length on the new laboratory being erected near Chicago, where national offices of the association are also maintained.

Cement is in extremely short supply in the Pacific Northwest and the shortage is so acute that K. E. Hamblen, Portland, Ore., consulting engineer, appeared on the program to make a plea for new plants or for greatly increased production capacity by existing plants to remedy the situation. He presented facts and figures, based upon present and future population trends and the tremendous amount of public works planned, to show that during the 20 years ahead present plant capacity will fall short by at least 2,000,000 bbls. annually of filling minimum requirements.

Major operating costs in a cement plant are labor, power, and fuel. Because the industry's use of fuel and its method of use is unique, the devices adapted for saving fuel are always of intense interest. With the installation of an addition Lepol kiln at the Davenport, Calif., plant of the Santa Cruz Portland Cement Co., this concern's experience with this type of calcining unit has covered several years of operation. A paper by Superintendent Robert A. Kinzie on the fuel economy of this equipment attracted respectful attention.

In normal practice, raw material, either dry or in the form of slurry, is fed to a kiln where it is calcined and clinkered. In a Lepol kiln, the raw material is dampened and rolled into pellets, or balls, in a nodulizer, fed to a traveling grate on which it is dried and partially calcined; then it goes through a very short rotary kiln section, where the process is completed.

Usual methods of saving heat have been the use of long kilns with chains in wet-process plants, and the use of waste-heat boilers in dry plants. At the Santa Cruz plant using the Lepol system, Mr. Kinzie reported a fuel economy of 4.7 gal. of fuel oil per bbl. of clinker had been achieved, or about 704,000 B.t.u.'s per bbl. This compares with the plant's old conventional kilns using the same fuel and raw material, which consume 7.8 gal. per bbl., or 1,130,000 B.t.u.'s per bbl. Average consumption for 1948 was 708,000 B.t.u.'s per bbl. for Lepol-processed clinker, based on the quantity of cement sold and oil purchased. The overall fuel consumption for 1948 was 6.6 gal. per bbl.

The Lepol system nodulizer is a cylinder 8 ft. 10 in. in diameter by 18 ft. long, sloping ½ in. per ft. and rotated at about 10 r.p.m. The inside of the shell is cleaned by a continuously-operated scraper. Dry raw material is fed to the nodulizer where, aided by sprays, it is rolled into balls ranging from ½ to 1 in. in size and containing about 15 percent water. The nodules fall on the traveling grate, where the hot gas from the kiln is pulled down through the nodules and grate and exhausted. From the grate the nodules enter the 11- by 12-ft. Lepol kiln.

Overall power consumption of the nodulizer, grate, kin and exhaust fan is about 1.25 kw. hr. per bbl., Mr. Kinzie reported.

Instruments on the Lepol system are greater in number than on the normal kiln. At Santa Cruz, temperatures at the inlet to the exhaust fan, the top of each end of the grate, and the bottom end of the calcining end of the grate are measured and recorded by thermocouples. A Ray-O-Tube indicates optically and records the burning-zone temperature of the Lepol kiln proper. Draft gauges indicate the pressure at the inlet to the exhaust fan, the differential through each end of the grate,

the differential through the kiln, and the pressure at the kiln hood. The kiln differential controls the exhaust-fan damper. Grate speed is interlocked with the kiln speed, and one of three values can be selected by the burner. The nodulizer is independently controlled by the nodulizer operator.

Phosphate industry Phosphate mining came in for considerable attention by the Industrial Minerals Division, technical focus having been aimed at the recent developments in Montana and Idaho. Brief resumes of mining, benefication and treatment methods currently employed were outlined by technical representatives of concerns now exploiting these deposits. Appearing on the program were Heath B. Fowler, Simplot Fertilizer Co.; R. J. Armstrong and J. J. McKay, Montana Phosphate Products Co.; D. L. King, manager, San Franciso Chemical Co.; and T. C. Russell and R. J. Caro, Anaconda Copper Mining Co.

An entire afternoon session was devoted exclusively to the Noralyn concentrator, the various phases of this new mine and flotation plant operation being described by I. Milton LeBaron, International Minerals Corp. The plant, which started operations in 1948, has a capacity of 1,500,000 tons annually. (See PIT AND QUARRY, June, 1948, p. 66, for a complete description.) Hydraulic classifiers and vibrating screens were described as inefficient when applied to the necessary sizing at 35-mesh for phosphate particles in this installation. Mr. LeBaron told of the effective use being made of trommels to accomplish the fine-sizing operation at Noralyn.

Another interesting application at Noralyn—the use of Humphrey-type spirals as a substitute for agglomerate tailing to produce an acceptable concentrate from feeds coarser than 28-mesh—was also outlined. Various sizes of hydro-separators are effectively desliming the feed preceding the concentration of phosphatic fines. Mr. LeBaron told of the various methods of slime removal from the granular fraction, as well.

MINERAL BENEFICIATION

Grinding Problems An informative session on grinding problems, under the auspices of the Mineral Beneficiation Division, attracted a large audience on the opening day of the gathering.

Harlow Hardinge, president of the Hardinge Co., developed the theme of the program with a paper on *Effect of Mill Speeds on Grinding Costs*. Laboratory and plant data were reviewed to show the economic gain obtainable by operating ball-mills at slower than "standard" speeds. Such a slow-speed mill, even though larger in capacity and higher in capital cost, was declared able to reduce operating expense so greatly that the added capital outlay is more than recouped within a single year of operation. Factors affecting a long list of test results were analyzed by Mr. Hardinge.

A prediction that closed-circuit wet grinding of cement raw materials will eventually become universal practice was made by J. M. Wolfe, Allis-Chalmers Mfg. Co. Mr. Wolfe's paper pointed out that the elimination of excess fines, a result of closed-circuit grinding, decreases ringing in the kiln to a great extent. One wet ball-mill in closed circuit is usually sufficient for a 2,000-bbl. per-day plant where silica elimination by flotation is not a requirement. Mill selection is based on grinding indices.

Jaw Crusher Capacities D. H. Gieskieng, also of Allis-Chalmers, presented a paper on *Jaw Crusher Capacities* which outlined test results with Blaketype equipment, both in the laboratory and in the field. Variables studied included size of feed, density, hardness, crusher speed, angle of nip, setting, and plate shape. The end result enabled the formulation of a relatively simple equation for comparative purposes and for making operating adjustments on existing installations.

The development of laboratory apparatus to combine grinding and flotation simultaneously was described by A. K. Schellinger and O. C. Sheppard of Leland Stanford University. Object of the experiments was to prevent over-grinding in the process and early indications are that fair recoveries can be obtained, as compared with conventional grinding and flotation procedures. The conclusion was presented that these preliminary tests may point the way to a large-scale operation which might offer advantages in easily-slimed ores or in the direction of space and equipment economy.

Flotation Bulk and selective flotation on barite and barite-fluorspar ores were described in a paper by George H. Roseveare of the Arizona Bureau of Mines. The processing data were disclosed from current practice at the plant of the Arizona Barite Company. Various reagent combinations were ultilized for concurrent water treatment and flotation of the barite from low-grade and complex raw materials. Output as a result of the process consists mainly of uniformly low viscosity drilling muds requiring a water-wettable barite concentrate of high specific gravity.

A. L. I's Fourth

(From page 86)

Sharpe & Co., Columbus Junction, Ia.

Mr. Sharpe revealed that sales of limestone went down last year; and he stated that this trend would continue with the slackening of government expenditures. He proposed that buyer reluctance as a result of this and other economic factors should be met with vigorous sales promotion in the form of new sales programs and a new approach to potential customers. The gist of this effort would be to convince the farmer of the increase in efficiency of his soil as the result of liming practices.

As a guide in setting up and carrying through an effective sales-promotion program Mr. Sharpe recommended: (1) use of direct mail based on an efficient mailing list, enclosing letters, literature and rate cards and utilizing the back of the envelope for advertising purposes; (2) distribution of literature at consistent intervals; (3) advertising in small town newspapers and weeklies, both want-ads and displays; (4) utilizing opportunities to speak before groups of potential customers, using movies, if possible; (5) construction of easy-to-see roadsigns directing to the quarry; (6) taking advantage of county fairs by setting up a prominent and comfortable booth, with added attractions, such as souvenirs and auctions; (7) giving dinners in conjunction with meetings of AAA members and the same for truckers, in each case including their wives; (8) distribution of thermometers or calendars cooperatively with truckers on a 50/50 cost basis; (9) exploiting the willingness of banks to cooperate with the program; (10) stressing the "superior facilities" of the individual product as a selling point; (11) prompt acknowledgment of orders.

A movement to annex a tract along the Tennessee River including the Signal Mountain Portland Cement Company's plant has been formally launched by the Signal Mountain Civic League. The city commission approved the proposal and organized a citizens' committee to work on the project.

Pacific Northwest Gets Adequate Supply Of Lightweight Aggregate

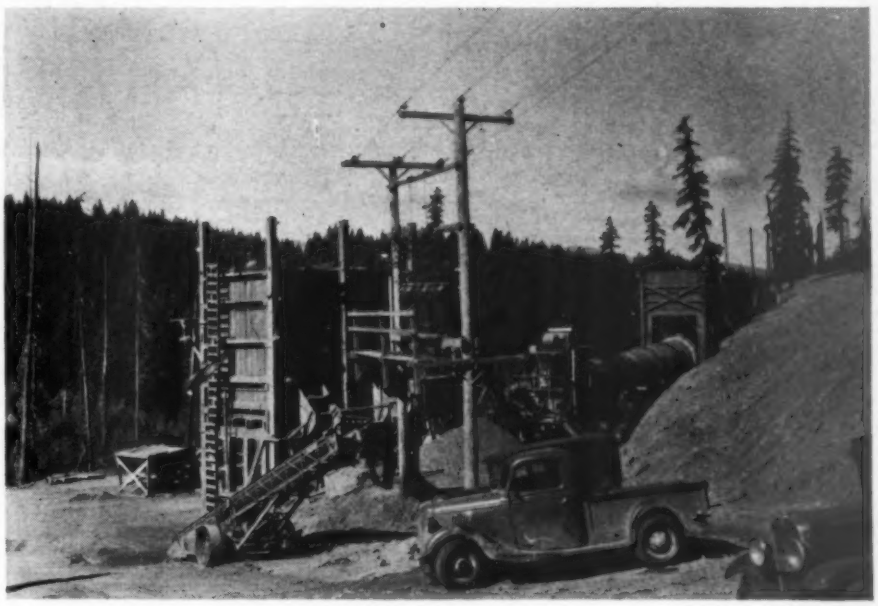
By HARRY F. UTLEY

another ON THE SPOT report

EXPANDED-SHALE lightweight aggregate became available commercially in the Pacific Northwest in 1948 following the formation of Northwest Aggregates, Inc., at Portland, Ore. Its plant, located near Banks, Ore., 40 miles west of Portland, is producing clinker at the rate of 12 cu. yds. per hr., and this output will be increased 50 percent shortly when a second kiln becomes operative. The product, known as "Lite-Rock", is enjoying good demand in structural concrete work and among concrete-products plants and is in an excellent competitive position since the closest other source of supply for a similar product is the McNear haydite plant north of San Francisco, about 600 miles south of Portland.

Northwest Aggregates, Inc., maintains general and sales offices in Portland. Frank Spangler is president. H. L. Priest, vice-president, and C. H. Farrington, secretary-treasurer, are part owners of the Empire Building Materials Co., one of Portland's leading concrete-block producers. Collis E. Druley is plant superintendent and engineer.

Development of the industry on a small scale was started by another group a year or two ago and its interests, together with the small existing kiln and the 90-acre deposit near Banks, were acquired by the new concern when it was organized late in 1947.



• A general view of the lightweight expanded shale plant of Northwest Aggregates, Inc., near Banks, Ore.

The raw material is in the Keasey shale and is a relatively soft, laminated gray rock of high silica- and aluminum-oxide content. Overburden varies from 6 to 20 ft. and is stripped by tractor-bulldozer. Jackhammers drill out small blocks which are loosened every day or so by light blasts and the well-fragmented shale is loaded into a feed hopper by "Scoopmobile." This method will continue in use while the supply is close at hand, but as the working face recedes, the company expects to install a drag-scraper or a cableway system.

• The face being worked in the shale deposit, showing the hopper, the shale crusher and the conveyor to the kiln-feed bin at the right.

Any large pieces are sledged through the 10-in. openings in the grizzly spanning the hopper, and the shale is choke-fed into a Badger 16- by 30-in. double-roll shale crusher directly below, one roll being equipped with teeth. The rolls are set to deliver a minus 2-in. product to an inclined belt conveyor running up to the 40-cu. yd. kiln-feed bin. A 1½-in.-mesh screen will split the raw material to feed the oversize to the new and larger kiln, the troughs going to the old small kiln (which to date has not yet been put back into operation).

The entire crusher-run product is now taken by the large kiln, fed by a reciprocating feeder and chute. This kiln is a Manitowoc 8½- by 70-ft. unit mounted on four water-cooled tires and revolving at approximately 2 r.p.m. It is lined with fire brick, slopes ⅜ in. per foot of kiln length, and is oil-fired by an Iron Fireman burner. No. 5 and No. 6 fuel oil is used and is preheated electrically. The oil is trucked in and stored in an elevated tank. Induced draft is produced by two 20,000-c.f.m. fans installed below the feed end, exit-gas temperatures being reduced from about 900 to 600 deg. by automatic dam-

(*Continued on page* 99)

Canadian Cement Production To Be Increased in Major Plants

IN THE January issue of PIT AND QUARRY we presented a complete report of the activities of the cement industry in the United States, particularly with respect to plant expansions in 1948 and future plans. Herewith are presented similar data on the cement industry in Canada.

Canada Cement Co. Expansion Plans Owing to the increasing demand for portland cement, the Canada Cement Company, Limited, is expanding considerably its productive capacity. Three additional kilns have been installed — one at plant 1 (Montreal), one at plant 12 (Exshaw, Alta.) and one at plant 5 (Belleville, Ont.). The first two are in operation and the one at Belleville will be in operation May 1, 1949.

The new kiln at plant 1 is completed and has been in operation since July, 1947. This kiln is 430 ft. long and 11 ft. 3 in. in diameter. The estimated output of the new kiln is 1,100,000 barrels per year. The additional kiln has necessitated extensive enlargements to the crushing and grinding departments, all of which work has been completed. The plant, which is the largest in operation by the company, is running at full capacity and the increased production will assist greatly in the supply of cement for Quebec and the Maritime provinces.

The new kiln at Plant 12 (Exshaw) came into operation in April, 1948. The kiln is 310 ft. long and 10 ft. in diameter. Its output is estimated at 700,000 barrels annually. As the new kiln is slightly larger than the present kiln, the potential output of the plant will be more than doubled by the installation of this additional kiln.

This plant serves largely the Western provinces — Alberta, Saskatchewan and British Columbia, and the additional production will take care of the present demands in these provinces.

Plans have been completed for the installation of an additional kiln at plant 5 (Belleville), and work is progressing satisfactorily. Owing to the difficulty of securing the required equipment, motors, etc., it is not expected that the new kiln will be in operation before May 1, 1949. However, the construction will be rushed to completion as rapidly as possible.

The new kiln is a replica of the present kiln and will be 455 ft. long and 11 ft. 3 in. in diameter. The estimated output of the new kiln is 1,200,000 barrels per year. As with the other plants mentioned, a great deal of additional work is required, including enlargements in the crushing and grinding departments to take care of the increased production.

The total increase in production being made available at these three plants will amount to approximately 9,000 barrels per day, or 3,000,000 barrels per year. This represents an increase of roughly 30 percent over the previous production. It is felt that the addition of 3,000,000 barrels annually will fill quite adequately the demands of the construction industry for many years to come.

British Columbia Cement Co., Ltd. Plans for the construction of a new cement plant by the British Columbia Cement Co. Limited, to be located at Deep Bay, Vancouver Island, are proceeding without delay. In addition to some 5,000 acres of land surrounding Horne Lake, Vancouver Island, the company has now purchased approximately 400 acres of land in the Deep Bay area, and this ground will be developed for the plant site.

It is reported by N. A. Tomlin, managing director, that the new works will cost approximately $4,000,000.00, and providing long-term trade conditions warrant, ground will be broken within the coming year.

The new works will manufacture approximately 700,000 barrels of cement per annum, which, in addition to the cement produced at the Bamberton plant, will give the company an over-all yearly capacity of about 1,800,000 barrels.

Raw materials for the new works will be obtained from the Horne Lake deposit situated some 8 miles away from Deep Bay by proposed railway, or alternately, the Blubber Bay limestone situated on Texada Island, which has been developed by the company for the past 15 years. The Texada Island limestone is convenient to the plant site in that only a very short scow haul is necessary to place it at the Deep Bay works.

Final plans are now being completed for the conveyance of all raw materials, plant layout, etc., and officials are watching the progress with keen interest.

The Bamberton plant manufactured nearly 1,100,000 barrels of cement during the year 1948, which is an all-time high for the British Columbia Cement Co. Limited, and has been made possible through an extensive modernization program necessitated by the heavy demand for cement in the province of British Columbia.

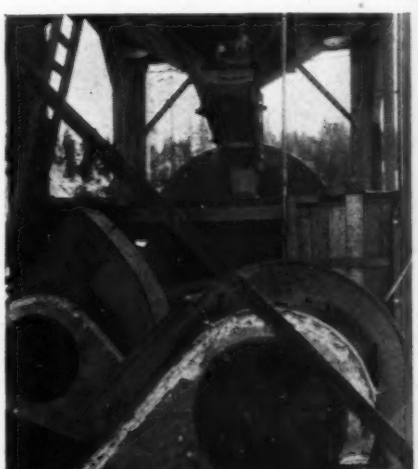
St. Mary's Cement Co., Ltd. The plant of St. Mary's Cement Co., Ltd., at St. Mary's, Ont., is going through an extension and transition period. A 10½- by 365-ft. rotary kiln will be added, as well as a new coal handling system and slurry storage.

Pacific Northwest

(*From page* 93.)

pers which admit cold tempering air. The exhaust is directly into the atmosphere without a stack.

Hot-zone temperatures are quite closely controlled at 2120 deg. F., the shale completing its bloat cycle at its calculated 2115-deg. point of incipient fusion. It requires 33



• The feed end of the kiln, with the reciprocating feeder and the chute from the overhead feed bin (above) and the two 20,000-c.f.m. fans.

minutes for complete passage of the material through the kiln. The clinker is withdrawn to storage piles for cooling before being ele-

(*Continued on page* 99)

Screenings

by William M. Avery

AS a dependable harbinger of Spring we've come to the conclusion that John L. Lewis is in a class by himself. The standard indexes all seem to go haywire every now and then, but the lad with the overstuffed eyebrows never misses.

John's 1949 dance of Spring deserves a special award of some kind for originality. He opened the season officially by calling his miners out on a two-week strike in protest against the appointment of Dr. James Boyd as director of the United States Bureau of Mines. He objects that Dr. Boyd, former dean of the Colorado School of Mines, never worked in a coal mine.

Shucks, John is *that* all you could find against the guy? We've done a bit of investigating of our own, and

have dredged up gobs of *really* sinister stuff. Dr. Boyd has never worked as a fan dancer, has no standing at all as a professional flag pole sitter, never took part in a six-day bicycle race, and so far as we can discover he has not, at least within the last ten years, given birth to Siamese twins, either by normal delivery or Caesarean section. There is no record of his ever having gone over Niagara Falls in a barrel, and even during his academic interlude he failed signally to set a single record in such virile pursuits as swallowing live goldfish and mice.

Obviously, John, the man not only lacks every single one of the important qualifications for the position of Bureau of Mines director, but he is utterly incompetent to boot. And all *you* can find to grumble about is that he never worked in a coal mine!

Notes from All Over

THESE little gems, which we know you'll treasure, all popped out of the same day's mail:

The city clerk of San Diego announces that plans have been filed

for grading and paving Easy Street. (Our informant didn't say, but we assume that material shipped from Fort Knox will be used in place of conventional aggregates.)

* * *

At one time, it was customary to execute Persian bandits by molding them into quicklime statues, which were left standing by the roadsides. (Suppose they had to give it up when the outdoor advertising craze swept the country.)

* * *

A homicide squad arrested a guy in Naples, Italy, the other day for selling finely ground white marble as flour. (Probably some descendant of the Borgias trying to restore the family's reputation.)

* * *

Cement that has become lumpy need not be thrown away, according to Iowa State College agricultural engineers. They say it can be used satisfactorily. (That's *all* they said, by the way. If you still don't know how to do it, try paying attention next time.)

* * *

G. (for "Got", maybe?) Rocks of Grand Rapids, Mich., is in the sand and gravel business. He also produces ready-mixed concrete, and advertises that "Rocks Makes Concrete". (In the interests of better grammar, we think he ought to take one of the small Rocks into the business.)

* * *

Public Opinion

IN an effort to gauge the extent to which voters answer the questions of public opinion pollsters without having any prior acquaintance with the subject matter, a Chicago advertising agency recently conducted a poll in which people were asked whether or not they favored the "Nonmetallic Minerals Act of 1948." Rather than confess ignorance, more than half the folks who were asked this question expressed enthusiastic approval of the nonexistent statute.

Betcha if somebody polled the members of Congress on the same question, considerably more than half the boys would come right back with some pretty emphatic reasons why they did, or did not, vote for the "Nonmetallic Minerals Act of 1948." Come to think of it, it sounds like a mighty fine statute.

Deliberation

THE following is from *Electrical Engineering* in one of its more profound moments:

"Lamps must be long to be efficient, and the average length is likely to increase. Long deliberation at one laboratory has produced the following rule on maximum lamp length: No lamp shall be longer than the maximum dimension of the room it is intended to fit."

It just goes to show you what you can accomplish with long deliberation. Betcha they rested on the seventh day after *that* mighty effort!

the plant operator

by WOLF G. BAUER
Consulting Engineer

PIT AND QUARRY

Drying Problems in the Lime and Allied Minerals Industries

PART VIII. AIR HEATERS

another P and Q exclusive

THE subject of air heating for dryers covers burners, combustion space, air mixing devices, temperature and humidity control, and gas volume regulation. The most common forms of burners were discussed in Part VII; these included all types of jet burners for various solid, liquid, and gaseous fuels. With solid-bed fuels and burners, the combustion space is integral. Three different types of automatic burners or stokers are illustrated in Figures 4, 5, and 6.

What Determines Combustion Space Combustion must be completed before additional drying and tempering air can be added to the hot combustion gases, *i.e.* in those cases where such products of combustion can be brought in direct contact with the material to be dried. If complete combustion is not achieved, then soot deposition may occur upon the material to be dried, and fuel cost will be high. Since most hydrocarbons and tar volatiles do not burn below 1400 deg. F., any excess air added at a point which is below this temperature will have no effect for this purpose. In other words, dilution with air must be done past the end of the combustion zone.

If the fuel, irrespective of the kind, can be burned at high-flame temperatures, heat release is increased, and combustion space will be a minimum. Small combustion space is desirable because of compactness in design, lower construction cost, and smaller radiant heat losses.

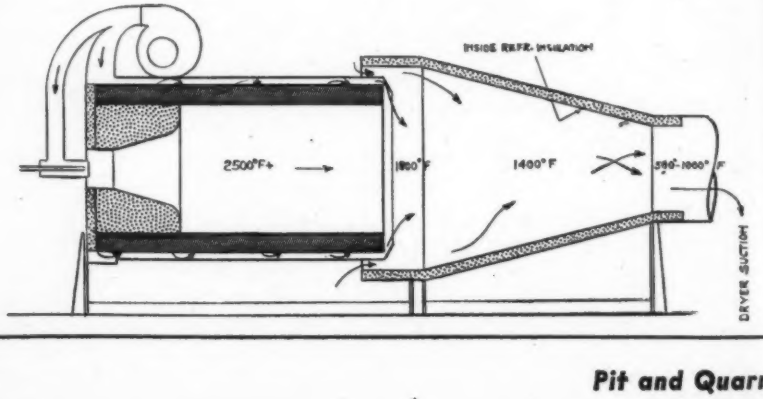
Certain fuels require more or less combustion space for various reasons. Pulverized coal requires an unobstructed ample trajectory space for the projected particles of coke. Solid fuel beds on grates require ample space above the bed to increase the time factor for mixing air and combustible gases escaping the bed. High volatile coals and all wood require, therefore, considerably more of this space to burn off the hydrocarbons than would coke or anthracite, for example.

Gas requires the least combustion volume because of the ease with which the fuel molecules combine, and can be mixed with air molecules to produce short, high temperature flames. Oil is somewhat intermediate between gas and coal.

Aside from the fuel itself, the thoroughness and turbulency created by mixing fuel and air determines the flame and combustion intensity. With excess air, required combustion space decreases. The U. S. Bureau of Mines has made a number of investigations on the requirements for solid fuels. In their studies with high-volatile coal, for instance, an increase in excess air from one to three times reduced the combustion space requirement by about one half. (It should be kept in mind, that in case of coal on grates, about 50 percent of the generated heat is created within the bed.) If excess air mixing is practiced past a certain point, however, flame temperatures will reduce, and incomplete combustion results.

Temperature Flame temperature plays a major role. Even if we are to carry out a drying process at temperatures of say 300 deg. F. or less, it is important that flame and combustion space temperature remain high, as only then will the fuel be completely utilized, and combustion carried out in minimum space. For the relationship between furnace temperature

FIG. 1 AIR HEATER FOR MEDIUM-HIGH DRYING TEMPERATURE



and heat release per combustion space, see The Lime Plant Operator, PIT AND QUARRY, December, 1947, pp 99.

To obtain such a combination of high burning efficiency in minimum space, it is necessary to employ a well-designed burner in which flame shape and volume is controlled and fitted to the combustion chamber. It is important that the flame does not impinge on any solid walls, and that the chamber walls are built of highly refractory material sufficiently insulated to maintain radiant surface temperatures that will not unduly chill the flame.

High temperatures are obtained with the maximum amount of combustion air premixed with fuel such as gas-air, oil-atomizing air, pulverized coal-air emulsions. High turbulency and air preheating are further contributing elements. Since air heating is not an intergral part of drying, the air heater can be designed for optimum combustion efficiency, irrespective of dryer requirements or restrictions. This fact is seldom appreciated or taken into account in designing furnaces for this purpose.

Insulation Many an operator has had experience with insulating the combustion chamber of his air heating furnace, in order to try to cut down on radiation heat losses, or obtain better combustion. In many cases, this has resulted in high temperatures, but the detriment of refractory life. Sometimes such an insulated wall will soften and slag down until a certain minimum thickness is reached, after which the refractory will stand up without further melting trouble. This is merely the manifestation of an equilibrium in which the heat gradient through the wall has reached a sufficient rate to maintain the hot face temperature below the melting point. This entirely natural and self-adjusting phenomenon points the way to design provisions. Insulation is better applied at other points just past the zone of heat generation, where temperatures are below the critical.

Air Heater Design Even today there seems to be considerable confusion in design of air heaters for specific applications. Despite the fact that many drying operations have changed over from 24-hour to 8-hour operation, with intermittent heating and cooling of the heater and the severe refractory conditions prevailing under this practice, many operators have nevertheless retained design features and refractory mass in the old proportions before such operating changes came into effect due to high labor charges. It is therefore not amiss here to point to the heat losses sustained in heating up bulky and extensive masonry and refractory chambers and structures for such cyclic operation. Not only is heat lost in masonry heat storage and large radiating surfaces, but there is usually much time loss in starting up the furnace from cold condition.

The air heater, in order to be efficient and modern, must operate at high-flame temperatures and high heat release; it must be low in heat losses through insulation or recuperation; it must deliver hot and completely burned gases; and it must be designed to deliver a clean gas-air mixture of constant volume and temperature to the drying system. Many of our present installations fall far short of incorporating these simple basic requirements. For jet-type burners using oil, gas, or pulverized fuel, a standard design for intermittent duty is shown in Figure 1. The basic design remains unchanged for any of these fuels, but the dimensions vary considerably.

The front of the heater is well insulated. The area of high temperature is the flame or primary combustion tile in which the initial flame generation takes place. This widening refractory opening is shaped to accommodate and direct the expanding flame, and to give it both ignition heat and direction. It must be accurately designed to fit the fuel cone without impingement. The material must be highest grade refractory, having high fusion and high resistance to thermal shock. It can be insulated, as it is just ahead of the zone of fullest heat generation. Thus it serves as a radiant envelope to promote early and steady ignition and rapid combustion.

The next zone is that of maximum heat evolution. Here temperatures would become excessive and injurious to refractories under the high-flame temperature conditions which we are trying to obtain. Careful design will here serve the double purpose of controlling surface temperature of refractories and at the same time eliminating nearly all of the high radiant heat losses usually associated with older standard designs. This is all accomplished by an air-cooled refractory wall under cooling control.

The simplest design calls for a double-walled metal cylinder, the inner cylinder being lined with high-grade refractories on the inside. The annular space between the cylinders is held to a minimum in order to maintain a high velocity cold air current for highest heat pick-up by the air. This air may enter at spaced points around either the burner end of the cylinders (Figure 1) or at the opposite end

FIG. 2

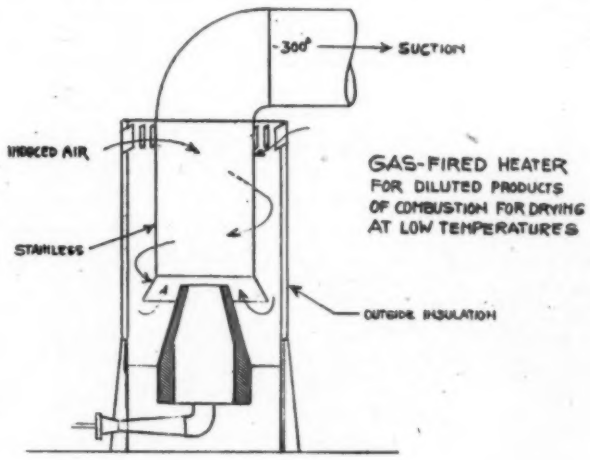
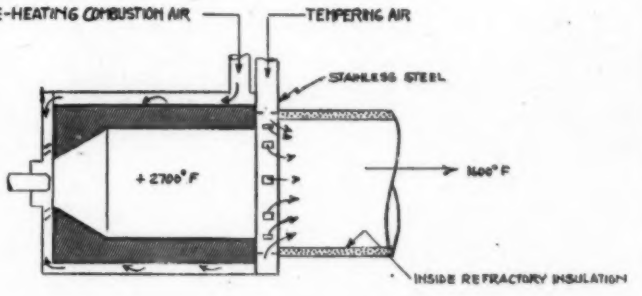


FIG. 3



HIGH-TEMPERATURE AIR HEATER
SUPPLYING DRYING AIR UNDER PRESSURE

of the combustion duct (Figure 3). Instead of being forced through under pressure, such air may also be induced by the drying system suction, as in Figure 2. The inner cylinder may be fitted with heat transfer fins or ribs to increase cooling action, and also to prevent short-circuiting of the air streams between the shells. Another method calls for the air to be blown tangentially into this annular space (employed by the writer), causing the air to travel in a spiral path several times around the cylinder before mixing with the hot combustion gases or entering the burner. Spiral guide vanes may be placed between the cylinders to direct the positive movement of this air.

This air controls the surface temperature of the refractory tube and is regulated for just this purpose and in step with the quantity of fuel burned and heat generated. It is not necessarily primary or secondary combustion air, nor final temperature controlling air for drying purposes. It does, however, take the place of insulation in that it recuperates radiant heat from the combustion chamber.

The last section or all of the inner cylinders may be constructed of stainless or other heat-resisting metal. The outside cylinder may be insulated if desired. It should be obvious that this design produces the minimum combustion space and refractory mass to be heated up after periodic daily shutdowns.

The third zone of the heater is the final air-mixing and temperature control chamber. The construction of this section changes somewhat with the temperature required for the dryer. Here again, a double steel shell can be used for similar purposes of air heating and metal protection. However, temperatures are now lower, and an insulating lining on the inside will conserve heat. When pulverized coal is the fuel, the enlarged third zone may also serve to settle out some of the ash if sufficiently enlarged and built as a trap. The third section of a heater incorporates the final air inlet and control, and connects with the duct leading to the drying system.

Solid Fuel-Bed Heaters When coal or coke is the fuel fired on grates, the standard furnace or firebox construction is as shown in Figures 4 and 5. To improve on this design, the same principles applied in the case of the jet burner air heaters hold for the stoker-fired solid fuel-bed heaters. It will be noted that the arrangement differs somewhat with the volatile content of the fuel. Hand firing may be practiced with coke, but is definitely not recommended with coal or wood in drying applications.

FIG. 4

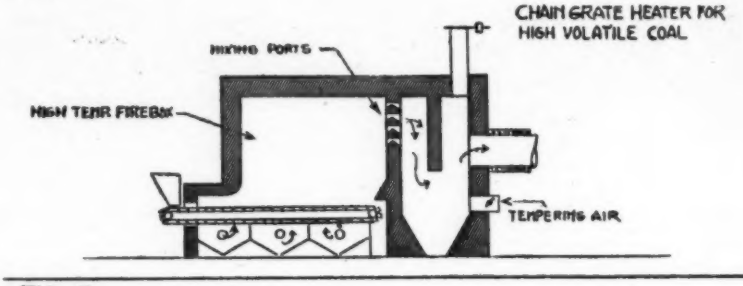


FIG. 5

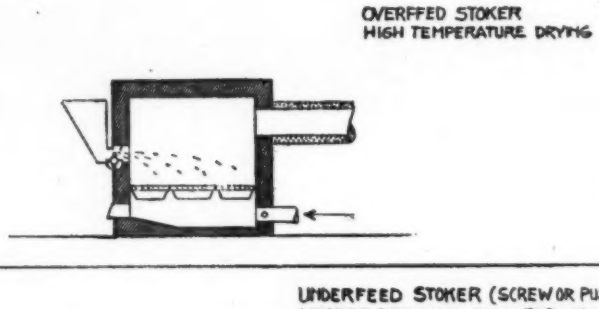
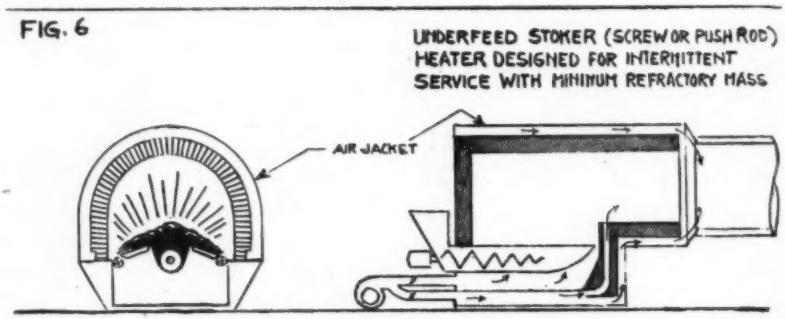


FIG. 6



The burning mechanism may be a gas producer or a stoker-fired furnace. Since we have already treated gas producers in detail in the September, 1948, issue of PIT & QUARRY, only stoker-fired furnaces are mentioned here.

Three types may be distinguished —over-feed, under-feed, and moving grate or chain-grate feed. Side and top feed are variations of over-feed. The nature of the ash, the caking and coking tendencies, the coal size, and the volatile content determine which is most suitable. As a general rule, the over-feed stoker, which throws the fuel particles on top of the bed from side or top, is well adapted to the lower grades of fuel, as well as those lower in volatiles. The under-feed type, in which the coal is forced upward and spread over the side grates by a reciprocating plunger with lugs, or by a feed screw, is suitable for high-volatile fuels, as here the volatiles are forced upward through the incandescent bed of coke above it, thus burning up the tarry hydrocarbons. The chain-grate type stoker is applicable to larger installations, should have closely graded fuel particles, and can handle many types of solid fuel. However, a coal which cakes easily will give trouble with air channeling.

Improvement in air heater design for such solid-bed fuels has been slow in coming about. Air-cooling jackets for drying air with heat otherwise lost by radiation, the reduction of refractory mass, the control of hot-face refractory temperature, and further improvements in the mechanical movement of fuel and ash all will help to step up efficiency of this vital phase of the drying process.

Canadian Cement Production Expected to Continue High

The outlook for continued prosperity in the Canadian cement industry during 1949 looks as bright as that of manufacturers in the United States. Prospects for a high volume of business for the year ahead seem assured, F. B. Kilbourn, president of Canada Cement Co., Ltd., recently told stockholders.

"There is a large backlog of construction work, some of which is already under way," he stated. "There remains to be done a very great amount of power development both in Ontario and Quebec, the need for which is growing daily."

Fourth Pennsylvania Agstone Meeting Held at Harrisburg

THE Agricultural Limestone Producers of Pennsylvania met in Harrisburg's Hotel Penn-Harris on March 3, 1949, for their fourth annual meeting. A number of outstanding speeches on topics of particular interest to the industry were given during this one-day convention.

F. Edward George, Thomasville Stone & Lime Company, Thomasville, was elected chairman of the agstone division; Leonard S. Fry, Fry Coal & Stone Company, Mercersburg, vice-chairman; H. M. Binkley, Binkley Brothers & Ober, East Petersburg; and H. W. Wagner, Harrisburg, secretary.

F. E. Wholaver, Whiterock Quarries, Inc., of Bellefonte, chairman of the program committee, introduced the distinguished speakers, the first of whom was the Hon. Miles Horst, secretary of the Pennsylvania Department of Agriculture.

According to Mr. Horst, an estimated million and a quarter tons of agricultural lime were spread on Pennsylvania farms in 1948. This is a lot of lime, considering that there are only 170,000 farms in the state, many of which are extremely small.

John A. Smith, from the State Production & Marketing Administration, pointed out that while conservation plans on a national level have been laid out through 1951, state planning has reached the 1953 stage. Such future planning, he said, permits the individual farmer to take an inventory of his conservation needs and pro-rate them over a five-year period.

For the first time since the inception of the AAA conservation program, said Tony Disanto, also from the state P. & M. A. office, the liming program is off to an early start. In Pennsylvania the 1949 liming program started in November. On the last day of February, 1949, orders for 200,000 tons of agricultural limestone had already come in from the county offices, which compares very favorably to the 98,000 tons ordered during the same period in 1948.

One of the most informative talks of the entire meeting was given by Frank J. G. Dorsey, regional director of the Wage and Hour and Public Contracts Division of the U. S. Department of Labor. He spoke on the application of the Walsh-Healey Act to the agstone industry.

According to Mr. Dorsey, the Congress undertook through this act to extend the right of government to require certain minimum labor standards in its contracts with independent contractors. Previous to passage of the Walsh-Healey Act government contracts had to be awarded to the lowest bidder, which usually meant that the contract was let to the employer paying the lowest wages. Consequently the conscientious employer was constantly faced with economic pressure to cut wage scales.

Of course, he said, the act applies only to manufacture and supply contracts in excess of $10,000. Where the contract is for an indefinite amount, the contracting government agency will include the Walsh-Healey stipulations only if they have reason to believe that the sum total of the call letters against the contract will exceed $10,000. If below $10,000, or if a top limit of $10,000 is set, the contract will not include these stipulations.

If the contract includes the Walsh-Healey provisions, this question arises: Will it apply to hauling operations? Where a farmer or a truck operator undertakes to haul agstone exclusively for one company, he will come within the provisions of the act. If the owner-operator of the truck, however, has a contract with the government for hauling and spreading of lime, the producer is not responsible for the hauler's wages. In the case of the producer who arranges with a trucking company for the delivery or spreading of limestone, coverage of the hauler would depend upon the regular practice of the limestone industry. If it is regular practice, the producer is a "substitute manufacturer," as that term is used in the Walsh-Healey Regulations, and consequently subject to the act. If it is not regular practice, the hauler is classified as a subcontractor and is not subject to the act.

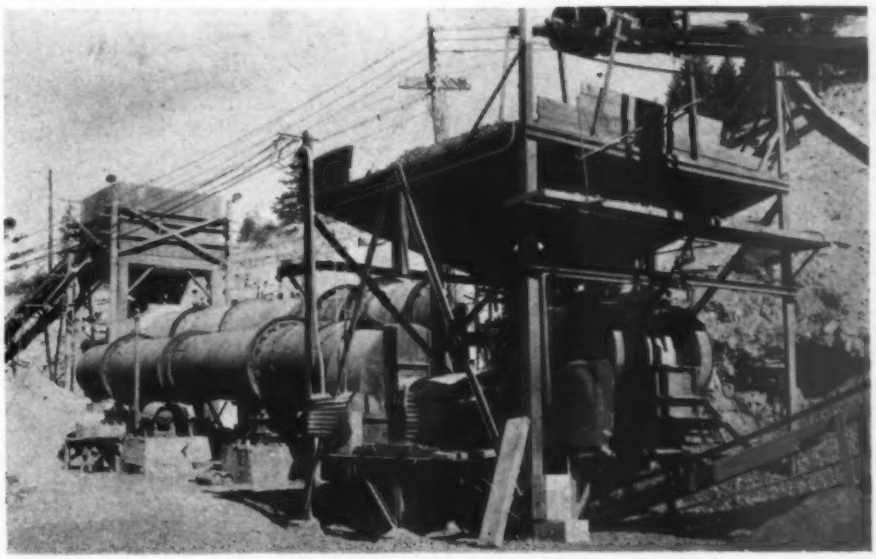
Pacific Northwest

(*From page* 94)

vated to a bin which feeds the final reduction unit, a Pioneer 20- by 44-in. double-roll crusher. The product of the rolls is conveyed to a 5- by 8-ft. Syntron-vibrated screen carrying 5/16-in. mesh. Screen throughs make up the ¼-in. and down product that is used extensively by block plants, while the oversize is used to a great extent for pouring lightweight concrete floor and roof slabs. Screen rejects may be returned to the rolls if desired, the rolls being set at from ½ to ¾ in. Average weight of the product is 1035 lbs. per cu. yd.

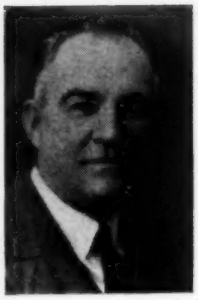
The plant is not served by a railroad but is located just 150 ft. off the wide concrete-paved Sunset Highway running from Portland to the sea, so no difficulty is encountered in making deliveries by truck. The company has been using 20-cu. yd. dump trucks in this service but is arranging with a contract hauler to take care of shipments with a couple of especially-designed 45-cu. yd. trucks and trailers.

When both kilns are in service, the plant will have a capacity of 400 cu. yd. in 24 hours.



• This view shows the two kilns and the double-roll 20- by 44-in. crusher which reduces the clinker to size.

personal mention

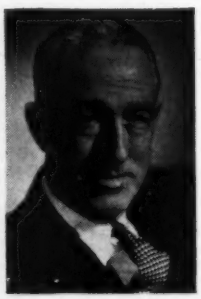


C. T. Kett

CHARLES T. KETT was recently elected president of the Staso Milling Company of Chicago by the firm's board of directors.

Mr. Kett has been associated with the concern for the last 35 years. Starting in 1914, he became general manager in 1928. In 1938 he was elected vice-president, a post he has held until his recent election to the presidency. In addition to his status as head of the Staso organization, Mr. Kett is a director of this firm and also of the Central Commercial Company of Chicago.

WILLIAM J. STEWART, sales manager of the Stewart Sand & Materials Company, Kansas City, Mo., was recently appointed to the five-man advisory committee for construction of the Kansas City Home Builders' Association.



H. W. Collins

HENRY W. COLLINS has been elected a director of the Celotex Corporation to fill the vacancy existing because of an increase in the size of the board.

Mr. Collins has been associated with Celotex since 1926, when he became a sales representative in the New York territory. Later he was transferred to the Mid-west, where he was appointed manager of the Chicago sales division; and in 1936 he went to New York in a similar capacity for that division. In 1938 he returned to Chicago as vice-president in charge of merchandising. In April, 1948, Mr. Collins became executive vice-president of the company.

ROBERT L. MILLER, for the last 12 years a field engineer for the Portland Cement Association in the Milwaukee district office, has become associated with Drummond Dolomite, Inc. The affairs of the latter organization are managed by the Reiss interests, with executive offices at Sheboygan, Wis., and a plant at De Tour, Mich. The company turns out a line of limestone products for the steel, chemical and road building industries in the Great Lakes area. Mr. Miller will be engaged in the development of new sales markets and product engineering.

L. M. CASSIDY, vice-president in charge of sales for the Johns-Manville Corporation, has been re-elected chairman of the board of governors of the Asphalt Roofing Industry Bureau.

At the same time P. C. ROWE, executive vice-president of The Flintkote Company, East Rutherford, N. J., was re-elected vice-chairman of the bureau.

EUGENE A. LEDYARD, Tehachapi, Calif., has been appointed chairman of the technical committee of the Portland Cement Association. Mr. Ledyard is executive chemist for the Monolith Portland Cement Company, Los Angeles.

The appointment of FRANCIS P. RICHARDSON to the new position of assistant manager of the National Gypsum Company was announced by Walter S. Corrie, treasurer.

Mr. Richardson joined National in December, 1947, after three years with the Buffalo regional office of the United States Veterans Administration.

J. FRANK BARTON, for the last 18 years chief chemist and research engineer of The Federal Portland Cement Company, Buffalo, N. Y., has resigned to enter the merchandising field.

Mr. Barton started his career in the cement industry as analyst for the New Egyptian Portland Cement Company, Port Huron, Mich., in 1925. He patented a "dry" chemical feeder, and developed an artificial pozzolana material for use in concrete.

He also conducted research with pozzolana cements. The development of a general-purpose masonry cement and high-temperature insulating cement, as well as studies to work out a scientific approach in the manufacture of home and industrial insulation, are also among his achievements.

obituaries

GEORGE B. CANFIELD, who was president of the Canfield Crushed Stone and Gravel Co., Cedar Grove, N. J., from 1939 to 1947, died on January 2 at Montclair, N. J., after a brief illness. He was 49 years of age.

Mr. Canfield took over the business founded by his father upon the death of the elder Mr. Canfield in 1929 and operated it until the time of its dissolution in 1947.

JAMES MASON REYNOLDS, 42, assistant general manager of the Queenston Quarries, Ltd., St. Davids, Ont., died on January 22 at the Greater Niagara General Hospital. He had been associated with the Queenston Quarries company for 24 years, coming to Queenston 22 years ago from the main office.

ALVIN C. SANTEE, who formerly operated the Alpha Portland Cement Company farm at Martin's Creek, Pa., as its superintendent, died on January 12 at Delavan, Wis. He had resided in Delavan for the last 6 years. Mr. Santee operated the Alpha farm for 36 years.

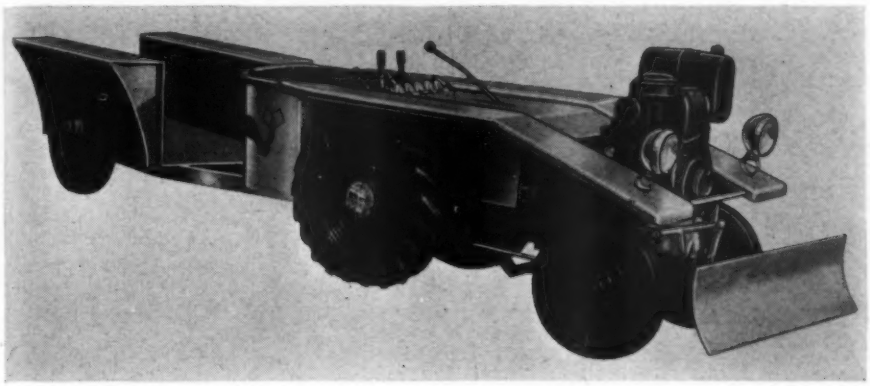
REUBEN J. SCHUMACHER, who was for 25 years chief engineer and manager of operations for The Kelley Island Lime & Transport Co. of Cleveland, O., died on January 26 at Toledo, O., at the age of 56 years.

After five years with the Budd Wheel Company of Detroit, Mr. Schumacher opened his own engineering offices in Toledo, under the name of the Basic Engineering Associates, for the service of the rock products industries. He was a member of the American Institute of Mining and Metallurgical Engineers.

HARRY R. BLACKWELL, 58, executive vice-president of the Indiana Limestone Co., Bedford, Ind., died on February 26 after a long illness. Mr. Blackwell was hired by the company as a water boy while he was still in high school. In 1921 the company sent him to St. Louis, Mo., as vice-president in charge of Southern sales. He held this post until 1940, when he returned to the Bedford offices.

new machinery and supplies

PIT AND QUARRY



● Angle Dozer

A new angle dozer known as the "Handy Andy" is now being produced and distributed by the Central Mine Supply Co., Mount Vernon, Ill.

Powered by a gasoline engine, the new machine stands only 3½ ft. in height, with an overall length of 7 ft. It has three speeds forward and 3 reverse, with 6-ft. turning radius. A special tilting front axle and hydraulic-powered front wheel enable it to maneuver into narrow areas.

The steering controls, brake and clutch are hydraulically controlled (separately) off the pump on the main shaft. Spindles have Alemite fittings, and the wheels are rubber-tired with heavy tractor tread. The synchronized right headlight turns with the front wheels, and a black line on this light indicates the position of the wheels to the operator at all times.

● Mobile Crane

Coles Cranes, Inc., is now established as an American organization, with complete facilities for service, sales and parts through dealers in the United States and Canada. Illustrated at the right is Model 8502, one of several models available. This is a 7½-ton, machine powered by a Ford V-8, 47-hp. gasoline engine. It has a turning cycle of 40 ft.

The Coles cranes have four motions: hoisting, swinging, derricking and traveling, each operated by a separate single motor, and all can be operated simultaneously with one-man control. Four pneumatic tires are furnished. Steering is controlled from the driver's seat of the revolving superstructure, which permits an unobstructed view in all directions. Brakes are electro-magnetic, automatically applied in the hoist, boom-hoist and swing. Hydraulic brakes in the rear wheels are operated by lever or pedal. All models are furnished with automatic "Safeload" indicators. The cranes have ample stability through a full 360-degree swing. They are available in 15-ton capacity, as well as 7½. Booms are interchangeable, and a choice of boom lengths is offered, from 12 to 40 ft. Coles Cranes, Inc., 4322 S. Paulina Street, Chicago.

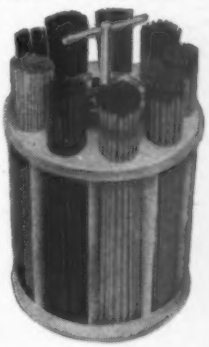
● Valve Bag

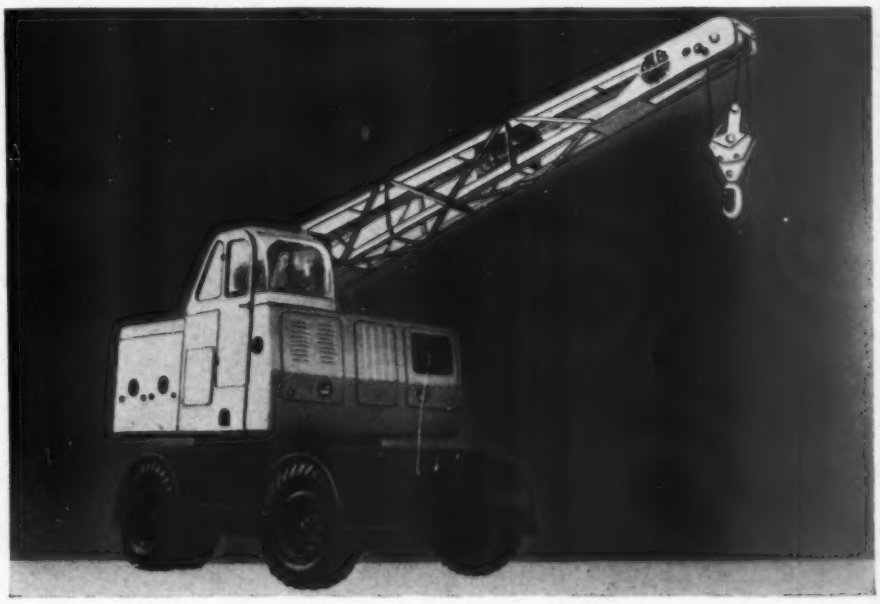
A development of Arkell and Smiths research, the "Shur-Close" valve bag is said to speed up filling operations. Careful tests disclosed that the Shur-Close bag steps up the filling operation by approximately one bag per minute over the conventional L. C. sleeve bag. The Shur-Close sleeve not only permits faster flow of the material being packed, but also prevents sifting.

Arkell and Smiths, Canajoharie, N. Y., are prepared to give immediate delivery on its new Shur-Close bag, officials state. The valve is adaptable to multiwall bags of any number of plies, and may be filled on all standard filling machines.

● Electrode Carrier

The Marquette Manufacturing Co., Inc., 307 E. Hennepin Ave., Minneapolis 13, Minn., recently announced a device which holds a supply of over 30 pounds of Marquette electrodes. There are 16 sizes and types of rod to cover a wide range of welding, including No. 130 Red-Rod, No. 140 Production - Rod, No. 40 Blu - Rod, No. 85 Hy-Test-Rod, No. 100 Hard-Rod, No. 500 Hard-Rod, No. 650 Tool-Rod, and No. 44 Nicol-Rod.





● Dump Trailer

Production of the new Terra Cobra Wagon Model TC-W14 has been announced by Wooldridge Manufacturing Company of Sunnyvale, Calif. It is available complete with 200-hp. Terra Cobra Model TC tractor, or as wagon unit Model W14 only, designed for quick interchange with scraper unit on all models of Terra Cobra self-propelled scrapers.

With a heaped capacity of 20.0 cu. yds., and 14.0 struck, the tapered bottomless hopper spot dumps to the rear, or spreads to the desired lift by moving back on roller tracks. Positive fore and aft motion of the body is effected by air controlled cables reeved without reverse bends in such a manner as not to contact the load. The cable is accessible at all times.

The hopper, which will pass rock up to 48 ft. in diameter, and the stationary chassis bottom plate are of heavy abrasion-resistant alloy steel. The hopper is ruggedly braced on all sides.

Massive rear wheel brakes operate from two air reservoirs on the wagon; these set automatically if the air supply from the tractor is interrupted. They may also be set by hand from the operator's cab. In addition, a disk parking brake is included on the tractor unit.

Positive two-wheel steering and traction and other tractor features are identical with the Terra Cobra scraper.

● Truck-Mounted Crane

A new ½-cu. yd. 10-ton truck-mounted crane and excavator has been built by the Wayne Crane Division of the American Steel Dredge Co., Fort Wayne, Ind. Known as the Model 44 Corsair, the machine travels at truck speeds, swings at 5½ r.p.m. and is convertible to all crane and shovel attachments.

The six-wheel, tandem-type carrier, built especially for crane mounting, is of 16-in. 45-lb., steel I-beam construction. Outrigger tubes are integral with frame—one pair ahead of the front wheels and one pair behind the rear wheels—to provide maximum rigidity and stability. Improved boom clearance and visibility are achieved by an offset, one-man cab and tapered frame ends. Other carrier features include tandem drive, 8-tire or 10-tire traction and a differential lock for heavy, off-the-road work. An auxiliary transmission provides ten speeds forward and two reverse. Power is supplied by a 6-cylinder gasoline engine which develops 105 hp. at 3200 r.p.m.

Crane features include four 20-inch clutches, enclosed gears running in oil

and a worm-driven boom hoist. The crane is powered by an 8-cylinder gasoline engine which develops 62 hp. at 1800 r.p.m. Diesel engine is optional.

● Diesel Trucks

International Harvester has announced two new diesel-powered trucks, Models KBD-12 and KBRD-14 with GVW ratings of 31,500 lbs. and 35,000 lbs. respectively.

The KBD-12 is available in four wheelbases, 155, 161, 179 and 215 inches. The KBRD-14 model is available with 161, 179 and 215-in. wheelbase.

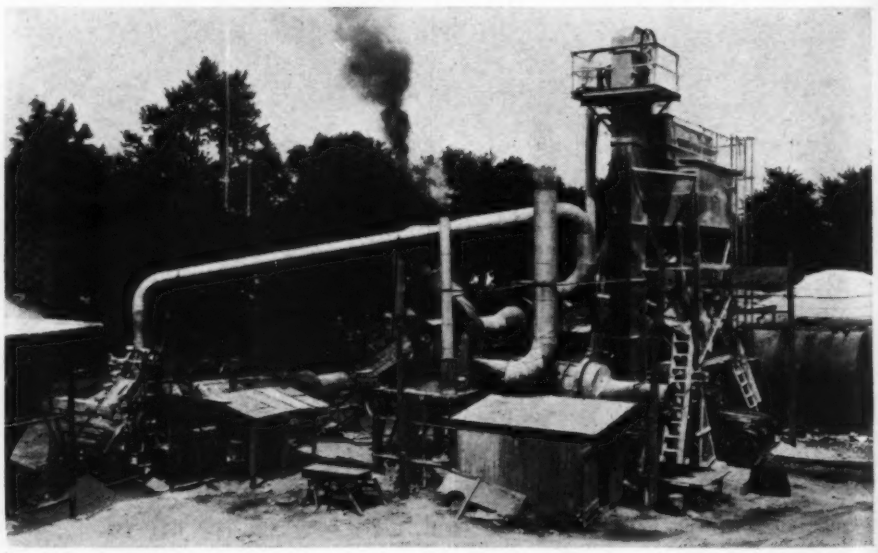
The power plant of these new models is the new HRB-600 Cummins diesel, which develops 165 maximum horsepower at 1800 r.p.m. The new engine has 5⅛-in. bore, 6-in. stroke, and a displacement of 743 cubic in. A new and larger air cleaner is mounted on the outside at the right side of the cowl. A newly-designed muffler, 5 ft. long and 6 in. in diameter, is mounted upright outside the cab's right rear corner. A 4-in.-diameter exhaust stack is used. The clutch is a 15-in. single plate dry disc type.

The KBD-12 is available with single or double reduction drive or two-speed rear axles, each available in three axle ratios. The KBRD-14 offers an option of either double-reduction final drive (five ratios) or two-speed rear axle with 6.41 and and 8.38 ratios.

Transmissions of both models are of the five forward speed type with either direct in fifth or overdrive fifth speed. Except in the 155-in. wheelbase chassis, two optional auxiliary transmissions are available to meet operating requirements. These auxiliary gear boxes, each with overdrive and underdrive ratios, in combination with the available five-speed transmissions and various rear axle ratios, permit the selection of exactly the right combination of power and speed.

● Dust Control

Practically dust-free operation has been effected with the installation of Roto-Clone equipment. In the accompanying view this asphalt plant is outfitted with a Skimmer Precleaner used in conjunction with a type W Roto-Clone. The dust-laden air is first drawn into the Precleaner, where a high percentage of the material is collected dry for salvage. From the Precleaner the air passes into the Type W Roto-Clone, where dynamic precipitation is combined with water sprays to trap the finest and lightest dust particles. The air is then exhausted, dust free, while the collected material and water are discharged in the form of thin slurry. Manufactured by the American Air Filter Co., Inc., Louisville 8, Ky.



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unloads car of rock or crushed stone in 45 minutes

B-G HOPPER CAR UNLOADER

Here's a rugged all-material unloader that's completely new in design. The 358 cuts hopper car unloading time as much as 90%—unloads most any bulk product from fine sandy material to large-sized rock aggregates at capacities up to 3 tons per minute—empties a 60-ton car in as little as 45 minutes without jam-ups or delays. There's *positive material flow at all times*. Easily "spotted" in track pit or above rails—really portable—can be towed at normal traffic speeds.

B-G PORTABLE CONVEYOR

The newly designed B-G Model 363 Portable Conveyor is an extremely flexible machine that will prove to be profitable to yards, industrial plants, contractors, etc. Speeds up stockpiling or transfer of material from car or stock pile to trucks. Entirely new in design, the 363 features V belt drives, pneumatic tires, shock absorbers, towing hitch, and a host of *new* improvements. Send for new attractive literature on these two great B-G machines.

84

BARBER · GREENE COMPANY, AURORA, ILLINOIS

Constant flow Equipment

LOADERS | PERMANENT CONVEYORS | PORTABLE CONVEYORS | COAL MACHINES | BITUMINOUS PLANTS | FINISHERS | DITCHERS

Since I got this MICHIGAN, I've been able to handle a lot of the jobs around the country that I had to pass up before. That shovel gets to the job as fast as my trucks, and under its own power. It'll roll through city traffic without any trouble—and I don't have to worry about highway limits. Best of all, it'll pull in and out of any place the trucks can go. Yessir, my MICHIGAN is always ready to go—saves plenty of time too!

I looked 'em all over before I decided on MICHIGAN—and the way it has performed since convinces me that MICHIGAN is 'tops' as a money-maker.

DID YOU KNOW
you can buy
a brand new
MICHIGAN
TRUCK CRANE
complete with chassis
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Write for Bulletin 100, "*On the Job with* MICHIGAN"

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY
315 SECOND STREET, BENTON HARBOR, MICHIGAN, U.S.A.

● Magnetic Pulley

A new permanent magnetic pulley which incorporates a special design of Alnico metal poles, self-energized and requiring no electrical current, has been designed by Stearns Magnetic Mfg. Co., Milwaukee, 4, Wis.

The new Stearns permanent magnetic pulley is applicable for problems involving automatic removal of tramp iron from raw or processed materials, for separation of magnetic and non-magnetic products, for reclaiming secondary metals and for the protection of machinery, grinders, pulverizers or similar equipment.

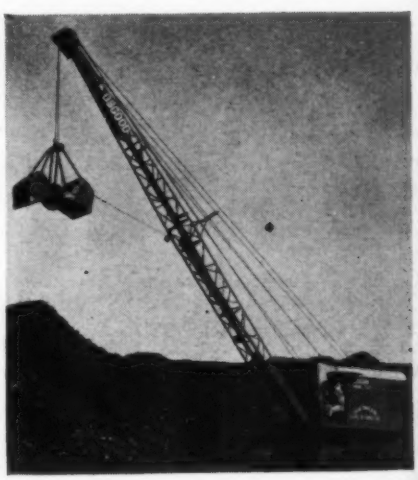
It is designed for uniform high magnetic strength over the entire face of the pulley; and because no wiring or electrical connections are needed, it can be operated under all atmospheric and temerature conditions. More than 50 sizes are available from 12-in. diameter by 12-in. width to 30-in. by 60-in.

A complete line of self-contained horizontal or inclined magnetic pulley type separators with Stearns permanent magnetic pulley, idler pulley, endless belt and drive in suitable frame also are available in all standard sizes.

● Small Excavator

The Osgood Co., Marion, O., has announced its newly-designed Type 72, a 1¼-cu. yd. excavator and materials-handling machine.

Three models are available: The Model 720, a shovel, dragline, clamshell,



crane or hoe, with all front-end attachments interchangeable; the Model 725 Mobilcrane; and the Model 727 dragline, clamshell or crane (illustrated).

Improvements on these machines include a new type of crawler unit, with each tread belt independently controlled, and the addition of the new Osgood-type hook rollers. Heavy brackets supporting the rollers are mounted at each corner of the deck. Further stabilization of the superstructure on the crawlers is through a gudgeon which is a part of the crawler base casting.

The Model 725 Mobilcrane is a one-man operated, one-engine machine, mounted on a rubber-tired wheel-mounted chassis. Independent travel unit provides one or two speeds forward and reverse, as required.

trade notes

The appointment of Jack B. Bond as district manager of the central territory for the Crusher and Process Machinery Division has been announced by D. A. Cheyette, vice-president, Nordberg Manfacturing Company, Milwaukee, Wis. Mr. Bond will have headquarters in Milwaukee.

J. B. Bond

Mr. Bond was associated with the Galland-Henning Mfg. Company, H. W. Weimer Company, and the A. O. Smith Company before joining Nordberg as a sales engineer in 1944.

The Birmingham Rail & Locomotive Company, Birmingham, Ala., is observing the 50th anniversary year of its operation under one family's ownership. Special "golden anniversary" stationery bearing a large "50" in gold has elicited much favorable comment.

Founded in 1899 by Haskins Williams and his brother, R. J. Williams, the firm is today operated by the latter and his sons, R. J. Williams Jr. and Haskins Williams II. The company's line includes diesel-electric, diesel mechanical, gasoline mechanical and steam locomotives; locomotive, crawler and gantry cranes; shovels; draglines; cars; and railroad supplies and accessories.

The American Society of Mechanical Engineers has announced the designation of Frank S. G. Williams of New York, Eastern manager of Taylor Forge and Pipe Works, as chairman of American Standards Association Sectional Committee B-31, which is responsible for the American Standard Code for Pressure-Piping.

Mine Safety Appliances Company, Pittsburgh, Pa., has announced the addition of Mac L. Crews to its industrial sales field force as of February 1, 1949. Prior to joining M.S.A., Mr. Crews was employed as a field representative by the National Mine Service Company. He will be located in Nashville, Tenn.

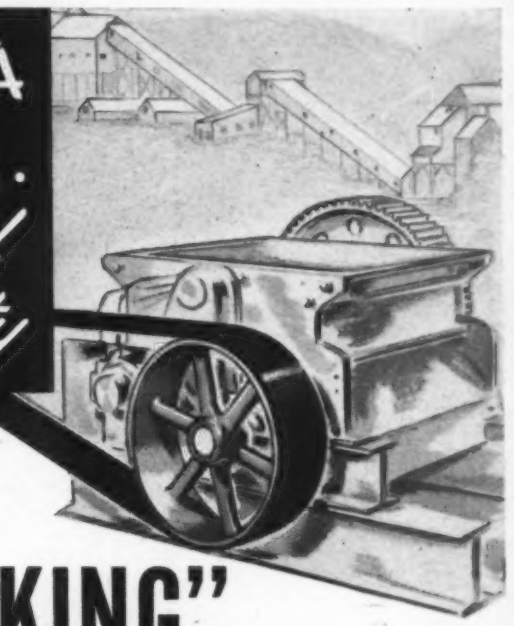
J. R. Lewis was recently appointed district manager by Quaker Rubber Corporation, in charge of the territory which includes the greater part of Eastern United States. Mr. Lewis will be in charge of District No. 2 of the sales organization.

Kennametal Inc., Latrobe, Pa. announces the appointment of James V. Wilcox and Jason C. McGuire as sales and service representatives. Mr. Wilcox is located in Provo, Utah, serving the territory of Utah, Wyoming and western Colorado. Mr. McGuire is located in Eastbank, W. Va., serving the central West Virginia territory.

Research and development of safety equipment for all industries, including the construction industry, will be undertaken in a new laboratory, said to be the largest of its kind in the world, to be built in Pittsburgh by Mine Safety Appliances Company.

Activities of scientists there will be coordinated with those of the U. S. Bureau of Mines, U. S. Public Health Service, Industrial Hygiene Foundation of Mellon Institute, Harvard School of Public Health, the new School of Public Health at the University of Pittsburgh and fellowships at other leading universities.

EXTRA Strength... Grip... and Durability



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Raw Edge TRANSMISSION BELTING

Custom-built . . . with everything it takes to deliver continuous power to your primary and intermediate crushers. Pure rubber skin friction permits greatest flexibility without risk of ply separation. *Minimum stretch* makes belt run true, reduces strain on pulleys and avoids shut-downs for tightening. Raw edge construction, with edges especially treated to keep out moisture.

Made in all widths up to 48" . . . endless if desired.

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He didn't forget . . .

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When workers risk their eyes, with disastrous results to both themselves and the company alike, it's time to look into the cause of unsafe practices.

Goggle Style TAW51

WILLSON answers the problem of getting safety equipment worn by designing the utmost comfort into their entire line of eye and respiratory protective devices. The goggles illustrated have eyecups that are molded to fit the bony structure around the eyes. The chain bridge and elastic headband are adjustable for comfortable fit. And the Super-Tough* lenses meet or exceed Federal Specifications for optical clarity as well as impact resistance.

DAILY REMINDERS

Such as Willson "Blind Man" Safety Posters keep workers aware of the need for wearing goggles. Supplies available on request.

WILLSON*

"Established 1870"

*T. M. Reg. U. S. Pat. Office

WILLSON PRODUCTS, INC., 102 THORN STREET, READING, PENNA.

Lloyd L. Bower has been appointed chief engineer of Waukesha Motor Company, succeeding James B. Fisher, who retired on January 31 after 35 years of active duty. Mr. Bower has been active in the company's engineering department for more than 20 years, and as Mr. Fisher's assistant for half that time.

A new $150,000 parts depot, established by Caterpillar Tractor Co., Peoria, Ill., to facilitate parts shipments to "Caterpillar" dealers and customers is under construction in Indianapolis, Ind., and will be ready for occupancy this summer.

The depot, stocking parts for "Caterpillar" diesel track-type and wheel-type tractors, diesel engines, diesel motor graders and earthmoving equipment, will permit strong support of dealers' parts inventories and speedy handling of emergency parts requirements of customers.

Link-Belt Company announces the appointment of J. H. Oakes as sales manager, enclosed drives, with headquarters at the company's Philadelphia plant, and that he will be assisted by Harry F. Kurz as representative, enclosed drives, with headquarters at the Pershing Road plant in Chicago.

Enclosed drives embrace the L-B line of speed reducers and increasers, gearmotors, P.I.V. gear variable speed changers, "Electrofluid" drives and other enclosed drive units manufactured at the Philadelphia plant.

M. W. Latimer, 61, manager of the Hercules Powder Company office in Joplin, Mo., died suddenly at his home on February 23.

He entered the explosives business in 1911, when he joined the Independent Powder Company of Missouri as credit clerk. When that company was purchased by Hercules Powder Company in 1914, Mr. Latimer remained at the Joplin office, continuing his credit work and engaging in sales work. He was appointed manager of the office in 1919.

Link-Belt Company announces that Roy E. Jones, heretofore assistant export manager, has been appointed export manager of the company, with headquarters in New York City. He succeeds Carl A. Woerwag, who is retiring from active service because of ill health.

W. K. Perkins, manager of sales, motor truck division, International Harvester Company, recently announced the division of the former Eastern sales region into two regions, the Eastern and the East-Central.

The motor truck districts in the new Eastern region — Albany, Boston, New York, Philadelphia, and West Haven — operate 29 company-owned sales and service branches. The newly-created East-Central region includes motor truck district headquarters at Baltimore, Buffalo, Cleveland, Columbus, Harrisburg, Pittsburgh, and Syracuse, and 26 company-owned sales and service branches.

Appointment of J. P. Waite, Inc., Milwaukee, to a full line dealership is announced by the Davey Compressor Co., Kent, O. The dealer will handle all items of Davey manufacture, including "Air Chief" portable compressors, industrial stationary units, "Auto-Air" (truck-mounted) compressors, "Track-Air" (tractor-mounted) machines, mine and railcar units, mobile machine shops and "Da-V-Lite" portable lighting equipment.

E. B. Hill

Edward B. Hill, formerly general sales manager for the Gar Wood Industries, Inc., has been named vice-president in charge of sales.

Mr. Hill started with the old Wood Hydraulic Hoist and Body Company, predecessors to Gar Wood Industries, Inc., on February 1, 1926.

During the war years, Mr. Hill was manager of the Chicago District, where he supervised, in addition to his sales activities, the manufacturing of Gar Wood products for the war effort at the Chicago plant. He returned to the factory sales organization in 1947 when he was appointed general sales manager.

J. R. Thompson has been named manager of flat belting, conveyor, elevator and transmission belting in the industrial products sales department of The B. F. Goodrich Company, and Paul W. Van Orden manager of V-belts and packing.

Mr. Thompson has been with the company since 1930.

Mr. Van Orden has been with Goodrich for 21 years in belting sales and engineering positions.

Link-Belt Company, manufacturer of chain, power transmission and conveying machinery, announces a change of address for its Spokane warehouse and district sales office, now located at North 1303 Washington St., Spokane 13.

The new location provides considerably more space for stocks, and it is planned to carry numerous additional items that formerly had to be shipped from the East, San Francisco or Seattle. Homer A. Garland is district sales manager at Spokane.

Farrel-Birmingham Company, Inc., announces the appointment of M. H. Blank as representative in the Detroit area to handle the sale of gears and gear units manufactured at the company's Buffalo, N. Y., plant.

C. A. Franklin Jr. has been appointed district manager for New York Belting and Packing Company in the Rocky Mountain area. He will have under his jurisdiction all of Montana, Nevada, eastern Idaho, Utah, Wyoming, Colorado, New Mexico and Arizona.

NEW CATALOG-DATA BOOK OF INDUSTRIAL FITTINGS!

Contains . . . NEW FITTINGS . . . NEW DATA . . . EXCLUSIVE FITTINGS . . . NEW, HELPFUL TABLES FOR ENGINEERS . . . DESIGNERS . . . RIGGERS . . . BUYERS

Now . . . Select The *Right* Fittings For Your Job *Easily* . . . From The Most Complete Line Of Wire Rope and Chain Fittings. Stocked By Leading Distributors.

FREE! Solve any industrial fitting problem with Laughlin's new data book. Fill in coupon and mail . . . no cost . . . no obligation.

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THE THOMAS LAUGHLIN COMPANY, DEPT. 3, PORTLAND 6, MAINE

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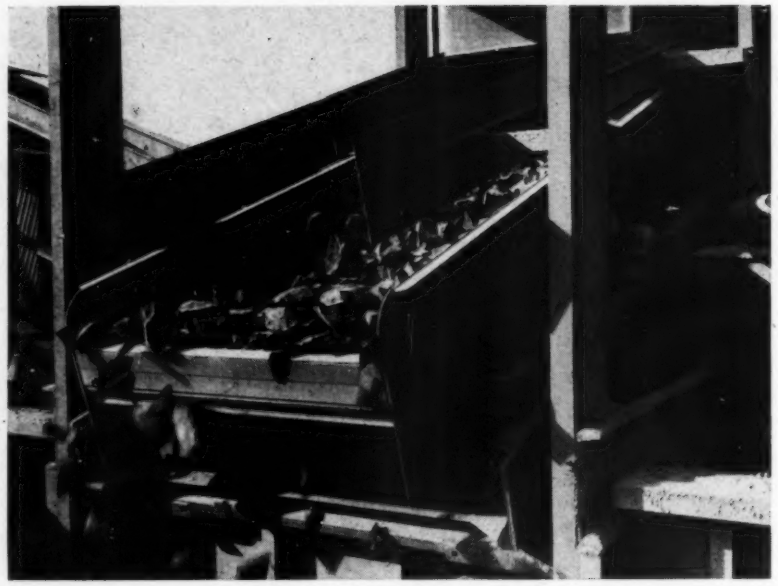
THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS

"For best screening results and least maintenance you can't beat SECO"

HARVEY N. CLARK

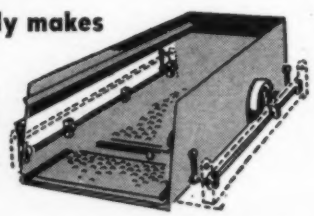


WE ARE SCREENING 3,000 TONS OF STONE PER DAY WITH SECO SCREENS

We set up our plant for volume production—we don't want to lose a day due to equipment breakdown. That's why through the years we've come to rely on Seco vibrating screens for every screening operation in our plant. We now have twelve Seco's screening everything in our plant from Ag-lime up. We have not touched one this year—not even for a minor adjustment. Signed, Harvey N. Clark, Dolomite Products Corp., Rochester N. Y.

SECO'S patented Equalizer Assembly makes big difference in performance

This exclusive Seco engineering feature controls the true circular motion of the screen to produce greater tonnages of *accurately* screened materials.



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Let Seco engineers study your screening requirements and recommend the right screen or screens for your job! Over 250 models. Write Dept. L today for the Seco Catalog 203 and the name of your nearest distributor.

SECO THE TRUE CIRCULAR ACTION VIBRATING SCREEN

SCREEN EQUIPMENT CO., INC., BUFFALO 21, NEW YORK

In Canada: United Steel Corp., Ltd., Toronto

Completion of a 16 mm. sound and full color motion picture featuring the "Traveler," ½- and ⅝-cu. yd. rubber-tired excavator and crane, is announced by the Sales Division of The Byers Machine Company, Ravenna, O., manufacturer of power shovels and cranes.

The film, entitled *There's a Difference*, consists of 20 minutes of action-packed scenes showing the differences which are built into the machine, as well as various job applications for which the Byers Travel is well known and well equipped. Arrangements for viewing the film can be made by contacting local Byers equipment distributors.

L. Southgate

Leslie Southgate will represent the Detroit Diesel Engine Division, General Motors Corporation, as Northeastern zone sales representative.

Mr. Southgate will direct the sale of General Motors Series 71 industrial and marine diesel engines through Detroit Diesel's distributor-dealer organization. Territory covered in the assignment includes New York, northern New Jersey and all of the New England states.

Organization of a finance company, to be known as the International Harvester Credit Corporation, has been announced by the International Harvester Company. It will be a wholly owned subsidiary of the International Harvester Company, and its purpose will be to finance domestic notes receivable of the International Harvester Company for which there is no other source of financing available.

In announcing the organization of the new subsidiary finance company, International Harvester's statement said that the recent growth of credit sales shows that the time is at hand when Harvester needs new credit financing to supplement the financing of its sales by banks and other financial institutions.

Lyle T. Hanse has been named district sales manager of the New Holland Manufacturing Company, Mountville, Pa. He will be in charge of sales of New Holland pit and quarry equipment in North and South Dakota, Nebraska, Wisconsin, Upper Michigan, Minnesota, Iowa, Illinois, Missouri, Kansas and Indiana.

Dan C. Caywood has been appointed exclusive representative for George Haiss Manufacturing Co., Inc., division of Pettibone Mulliken Corp., producers of conveyors, loaders, buckets, materials-handling equipment and crushers, to handle sales of conveyors and coal loaders. His territory will include a part of Massachusetts and all of Maine and New Hampshire.

Several promotions and additions to the sales organization of Union Bag & Paper Corporation have been announced.

S. K. Bradley, formerly director of chain store sales, has been promoted to Eastern district manager of Multiwall sales. He is succeeded by E. M. Rickel, former assistant director of flexible packaging sales. The former has been with Union Bag for 11 years, and the latter 26.

R. B. Bennett, nine years with the company, has been promoted to a new post, district manager of flexible packaging sales. He will direct the department's field representatives.

R. C. Shannon becomes assistant to the director of flexible packaging sales. He has been with the company for seven years. With J. P. Duffy, director of specialty bag sales, he will assume Mr. Rickel's former responsibilities of co-ordinating the activities of various sections of specialty sales.

W. F. Jacobi has been named head of marketing research and development in flexible packaging sales, a new assignment which will consolidate development of new types of bags or new markets.

J. P. Schwede, formerly with Standard Oil of New Jersey, has joined the sales staff as assistant director of export sales. Charles Bond and Ryan Loftus, both formerly with Royal Bag Company in New England, have been added to the field sales staff, and will cover the New England states, with the exception of Maine.

Syntron Company, Homer City, Pa., manufacturers of vibratory materials-handling equipment and power tools, announces the appointment of George L. Chedsey as supervisor of mining equipment. He will work out of the company's main office, directing the engineering design and application of Syntron dewatering screens, vibratory feeders, conveyors, and grizzlies to the mining industry.

E. J. McIlvaine has been appointed as a junior salesman in the vibratory materials-handling division of the St. Louis office.

John C. Mitchell will take over power tool sales in the Boston, Mass., office.

A. C. Staley Jr. has been appointed junior salesman in the vibratory materials handling division in the Cleveland office.

F. J. Kirby Jr. will handle power tool sales in the Cleveland, O., office.

The Philadelphia branch sales office has moved from its former location on Spring Garden Street, to larger, more centrally located quarters at 1018-20 West Lehigh Avenue, Philadelphia 33, Pa.

The Kansas City, Mo., office has also been moved and is now located in the Wirthman Building, 31st at Troost Avenue.

W. H. Hammond of Detroit, Mich., has been elected vice-president in charge of sales for the Marion Metal Products Company, Marion, O. He was formerly vice-president in charge of sales for the Gar-Wood Industries, Inc.

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TRADEMARK REG
MOLY-COP
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Grinding Balls
Regular Carbon Steel Balls
Special Alloy Moly-Cop Ball
YOUR BEST BUY
The photos of fractured ball sections, reproduced above, show why Moly-Cop balls are your "best buy".
Note the clean break of fine martensitic structure of the Moly-Cop ball and its uniform high hardness to the core.
This is why Moly-Cop balls retain their shape longer, and grind more cement per pound of balls. Moly-Cop balls cut your grinding costs by wearing longer, grinding more efficiently, and by saving charging and handling time (less balls to handle).
Save money—specify Moly-Cop—your "best buy" in grinding balls.
Carbon and Alloy Steel, Ingots, Blooms, Billets, Plates, Sheets, Merchant Bars, Steel Joists, Structural Shapes, Road Guard, Reinforcing Bars
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HOUSTON KANSAS CITY TULSA
Export Representatives:
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legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Recently a reader wrote, as follows: "We have a law suit we want to win. You gave us a list of cases which helped us win a suit last year. Can you repeat? We have been selling concrete blocks to a corporation's purchasing agent for several years. Recently this purchasing agent bought blocks for the corporation. Before the bill was paid, he absconded. We had no written authority or notice from the corporation to sell blocks to this purchasing agent, but in the past the corporation *always* paid for all blocks purchased by the agent. What chance have we to win this suit?"

My answer is as follows: You can win this suit. Hand your lawyer my cited higher court cases, as follows: In *Hurst Company v. Ledford,* 268 S. W. 1090, the higher court held that where one of two innocent parties must suffer financial loss through acts of a purchasing agent, the loss should fall upon the one who authorized the agent to perform the act. Also, see *Deposit Bank v. Ohio Oil Company,* 62 S. W. (2d) 1048, and *Herfurth et al. v. Horine,* 98 S. W. (2d) 21. Both these latter higher courts held that an employer is liable for contracts made by an agent who was *held out* to have authority to make valid contract. Hence, where an employer consistently approves contracts made by his agent he *implies* or admits that the agent has authority to make *all* contracts within the scope of the business.

For example, in *Tennessee Company v. Cooke Automobile Company,* 206 S. W. (2d) 491, reported May, 1948, a seller sued a corporation for $3,500, the purchase price of goods bought by its purchasing agent.

During the trial the corporation attempted to avoid liability on the grounds that the purchasing agent did not present any writing or order to the seller from the corporation authorizing him to buy the goods, nor did any one connected with the corporation ever inform the seller that the agent was authorized to buy the goods. However, since the corporation had in the past paid for *all goods* purchased by the agent, the higher court held that the corporation had *impliedly authorized* him to purchase the goods. In holding the corporation liable for payment of $3,500 to the seller, the higher court said:

"The rule governing authority of an agent exists in accordance with the apparent authority which may be created 'by written or spoken words or any other conduct of the principal, which reasonably interpreted causes a third person to believe that the principal consents to have the act done on his behalf by the person purporting to act for him' . . . The company knew that Lerch (purchasing agent) was dealing with Cooke (seller), and if there was a limited authority, it was incumbent upon the company to notify Cooke (seller) of this limited authority."

No Direct Proof

It is well established law that neither an injured employee nor his dependents may recover compensation under the State Workmen's Compensation Act unless direct and definite proof proves that the employee was injured while attending to his regular work. Generally speaking, a physician's certificate is not good evidence.

For example, in *Marion v. Frank R. Messrs and Sons, Inc.,* 209 S. W. (2d)

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INDUSTRIAL WHEELERS

Get More Work Done Per Hour.....

When you want to speed the job—do it with MM Industrial Wheellers. Operators of ready-mix concrete plants report loading 70-80 tons of gravel per hour with MM Industrial Wheelers on average hauls of 100 feet from stockpile to hopper.

Investigate these advanced-design features that assure you dependability on rugged jobs!

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- "Roller Spin Steering" has roller and needle bearings from steering wheel to ground.
- RTI high-compression valve-in-head engine with 150 fewer wearing parts.
- Extra strong heavy-duty clutches.
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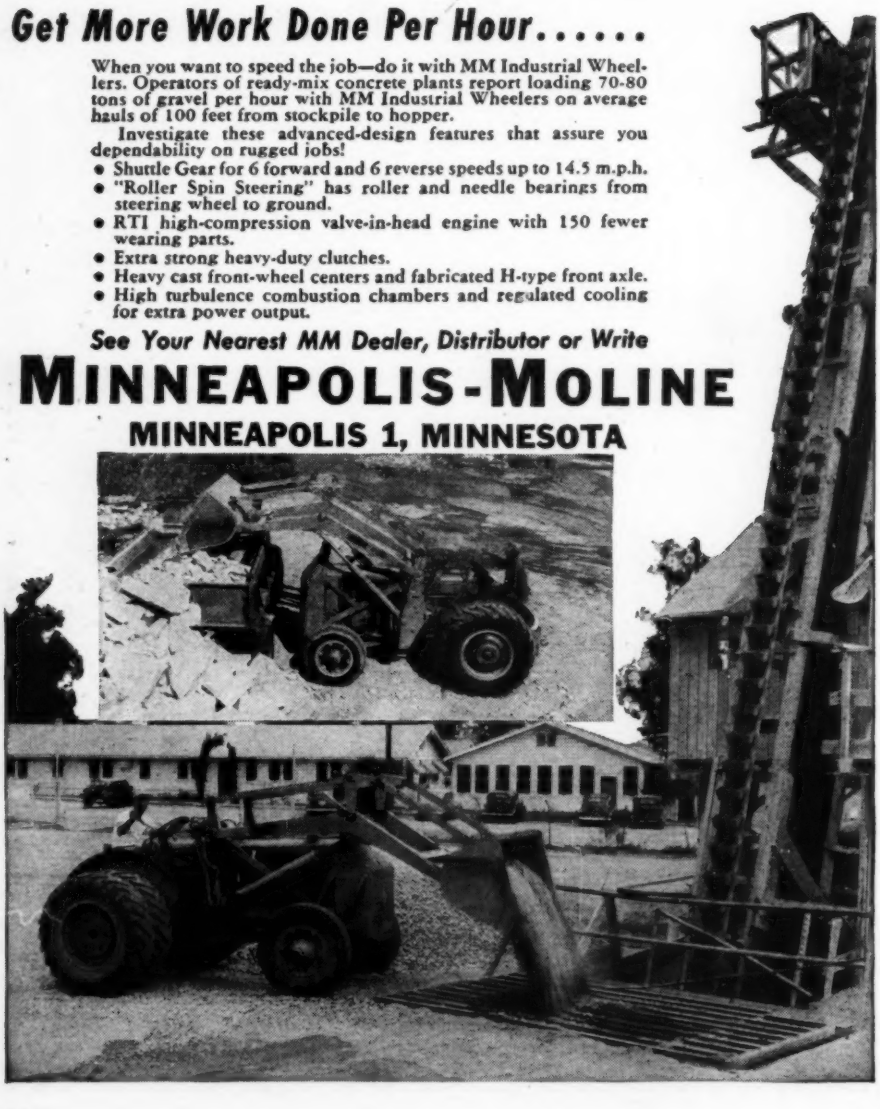


321, an employee's regular duties was the handling and loading of sacks of cement weighing about 100 pounds each. He entered a hospital and died a few days later from an abdominal abscess which ruptured into his stomach or abdominal cavity. The court was asked to decide whether the abscess was the result of natural causes, as contended by the employer, or whether it was caused by traumatic injury arising out of and in the course of his employment, as contended by the deceased employee's dependents. A death certificate signed by an attending physician showed that he was injured while lifting cement.

Since there was no direct proof of any traumatic injury sustained by the employee in connection with his work, the higher court refused to award compensation, saying:

"It does not follow that a death certificate filled in and signed by attending physicians, often without investigation, will be admitted as *prima facie* evidence upon which to determine the manner in which the deceased met his death."

Employee Previously Injured

If an injured employee had a prior injury the amount of compensation allowable for the present injury must be in due consideration of the prior injury.

For example, in *Special Gravel Company v. Neal,* 192 Pac. (2d) 660, the testimony showed facts, as follows: An employee of the Special Gravel Company was shoveling gravel in a truck when the gravel bank fell, knocking him under the truck, breaking his left leg and injuring his back. The testimony showed that the employee was 25 percent physically impaired *before* this accident.

The higher court held that the amount of compensation awarded under the State Workmen's Compensation Act must be in consideration of the employee's prior 25 percent disability.

Warehouse Company Liable

The owner of goods stored in a warehouse can recover damages if the loss resulted from the warehouseman's negligence.

For example, in *Cannon Warehouse Company v. Metry,* 208 S. W. (2d) 520 it was shown that a man named Metry stored equipment, cement and the like in a warehouse. The goods were damaged by a flood. The warehouseman attempted to avoid liability by proving that he did not anticipate that the flood waters would reach the warehouse, because when the flood waters started to rise he relied on the radio, newspapers, and statements of the meteorologist that the water would rise for 24 hours and then cease.

Nevertheless the higher court held the warehouseman liable to Metry for $689.

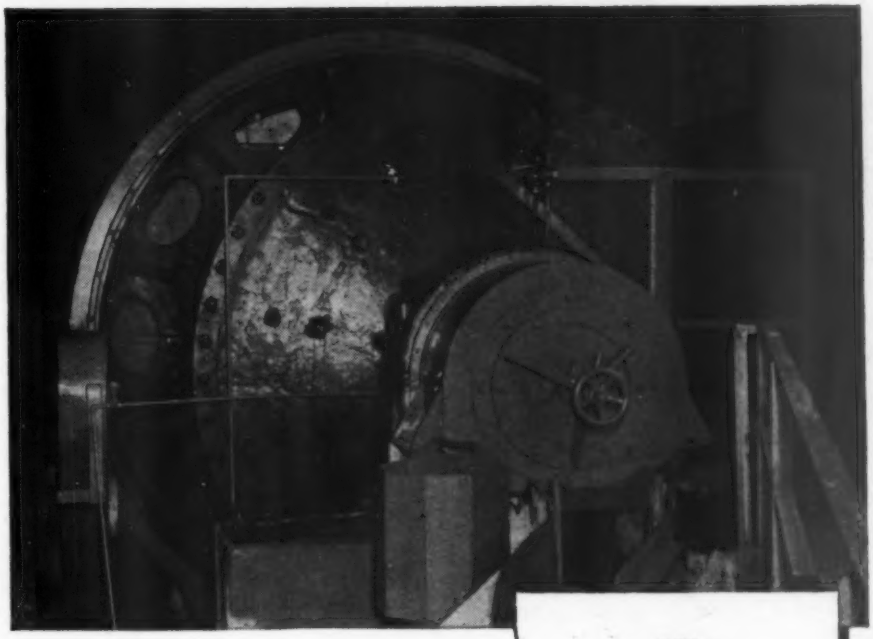
All Responsible

All intoxicated persons are liable in damages for an automobile wreck.

In *Wilson v. Holloway,* 208 S. W. (2d) 178, the higher court held that if the testimony shows that the occupants and driver of an automobile drank together and became intoxicated, *each* is as responsible as the driver, for negligent driving.

The thinner the mill lining, the greater the diameter

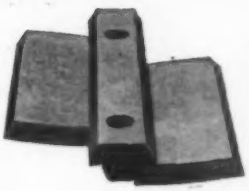
...AND THE OUTPUT



You can increase the output of your mill by installing U·S·S Lorain Rolled Plate Linings. The high strength of the rolled steel used in Lorain Linings allows you to install thinner plates, thereby increasing the diameter of the mill—and boosting the output.

U·S·S Lorain Rolled Plate Linings are easy to install and economical to maintain.

Plates are cut and shaped to precise dimensions and, combined with accurate rolled lift bars, offer close fit which eliminates openings and prevents washing of shell. Lift bars when worn out may be readily replaced with new bars. In cases of pronounced wear at feed end, liner plates, being symmetrical, may have their position reversed in each row prior to renewal of lift bars. This adds life to the lining, reduces cost. U·S·S Lorain Rolled Plate Linings are available through leading mill manufacturers whose names will be furnished upon request.



This photograph shows how Lorain lift bars clamp over edge of plates with shank of bar extending between plates.

...And for Added Economy, Greater Efficiency, Specify U·S·S Grinding Balls

U·S·S Grinding Balls—forged from special analysis steel which has been rolled to specifications determined by your requirements—are accurately heat-treated to take the punishment of abrasion and impact throughout the longest, heaviest runs. U·S·S Grinding Balls meet the most exacting specifications of hardness, toughness, soundness. Standard sizes are available from ¾" to 5" in diameter.

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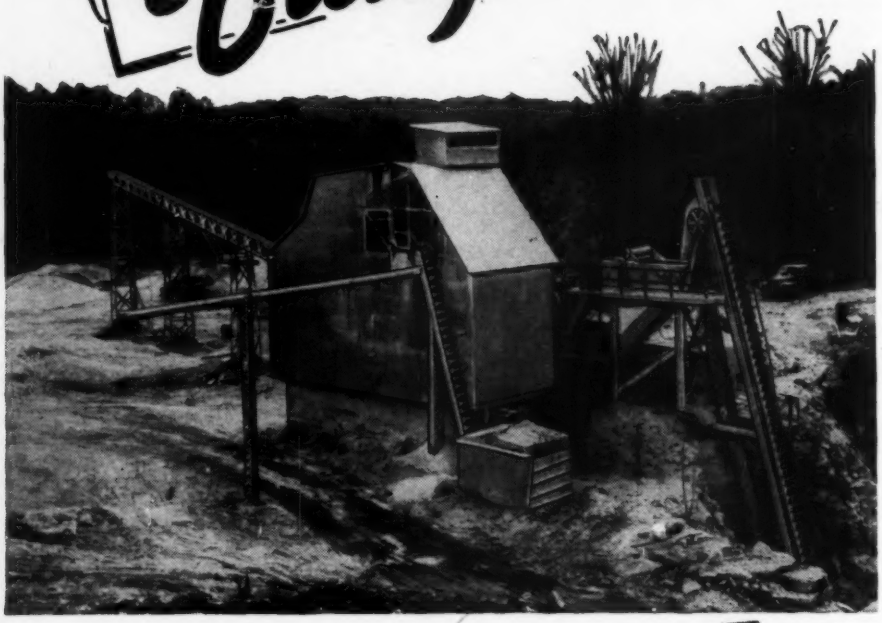
UNITED STATES STEEL

DESIGNED BY Baughman



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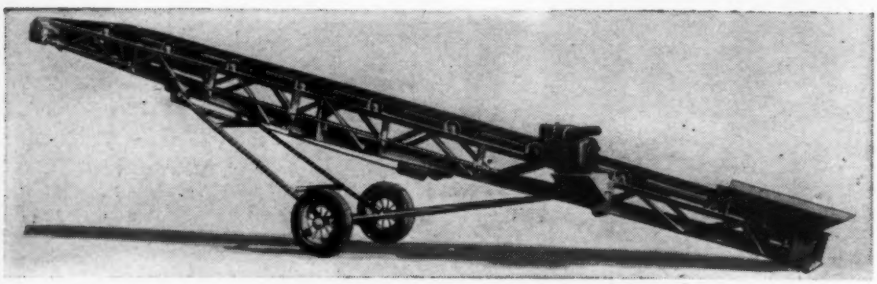
Here is a quarry keyed to maximum efficiency through the use of Baughman *HI-SPEED* Conveying Equipment. Practical, experienced engineering—proven in operation—that will increase your output. Baughman's standardized production methods cut your equipment costs. Quality materials and skilled craftsmanship minimize maintenance expense. Baughman *HI-SPEED* Equipment is designed to meet your particular requirements. Special equipment built to order. Learn how Baughman can help you. Write, wire or phone for complete information.

Pictured Below: MODEL NO. 164 TROUGH BELT CONVEYOR

Pictured at Right: MODEL NO. 175 STANDARD MEDIUM-DUTY BELT AND BUCKET CONVEYOR



If It's HI-SPEED . . . It's BAUGHMAN

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Also, in *Missouri Transp. Company v. Howard,* 143 S. W. (2d) 538, it was disclosed that a number of persons were drinking intoxicants and driving around. They had a wreck.

The higher court held that the negligence of the driver of the car would be imputed to each member of the party. Hence all persons are liable in damages.

Fair Labor Standards Act Bonus

According to a recent higher court, an employer who pays employees straight hourly wages plus bonus need not figure the bonus as wages when computing overtime wages under the Fair Labor Standards Act.

For example, in *De Waters v. Macklin Company,* 167 Fed. (2d) 694, the Macklin Company became involved in a lawsuit filed by employees who asked the court to allow them overtime compensation, liquidated damages, and attorneys' fees under the Fair Labor Standards Act. This company is engaged in the manufacture of grinding wheels and abrasive products. It employs approximately 400 persons. This testimony showed that the hourly wage rates to employees have increased from 65 cents in March, 1937, to 90 cents in June, 1942, since which date it has remained constant. In addition the employees were paid extra money depending upon the amount of work they turned out.

The higher court decided that the employees could *not* recover *any* overtime compensation because the company paid one and one-half overtime, figured on the basis of the total compensation received for straight time, divided by the number of hours each employee worked.

In other words, the court held that in figuring the overtime the company need not take into consideration money paid the employees based on the bonus for extra work they turned out.

May Discharge Union Engineers

Recently a higher court held as follows: An employer who has a contract with a union requiring him to employ only union members in good standing, and discharge all union members not in good standing, can *without any* liability discharge a union member if so requested by the union's business agent.

In *Jackson v. International Union of Operating Engineers,* 211 S. W. (2d) 138, the testimony showed facts, as follows: The International Union of Operating Engineers had a contract with an employer. Under the terms of this contract the employer was required to employ only union members in good standing and discharge union members not in good standing. The contract defined a union member in good standing as one not delinquent in payment of union dues and not under penalty or discipline invoked by the union.

The union's business agent demanded that the employer discharge a member from his job.

In subsequent litigation the higher court held that the employer could *assume* that the member was not in good standing and could without liability discharge him.

Must Assign Policy

Under no circumstances may you assign an insurance policy without knowledge and consent of the insurance company.

In *Liability Assur. Corporation v. Sweatt,* 57 Atl. (2d) 157, it was shown that a seller of a motor truck assigned to the buyer the registration plates and the insurance on the automobile. The following day the purchaser had an accident. The insurance company refused to pay the claim and the higher court held the insurance company *not* liable because the latter had not consented to assignment of the policy.

Ordinance Restricts Business

All higher courts agree that if a plant owner sues to prevent erection of a manufacturing plant by a competitor, on the ground that a city ordinance restricts construction of the plant, the plant owner who filed the suit must prove that the ordinance is valid. If he fails to do so, he will lose the suit.

For example, in *Taylor v. McLennan,* 206 S. W. (2d) 632, the higher court refused to stop construction of the plant saying that no proof was given that the ordinance is valid which restricts the location for residential purposes.

Not Absolute

Considerable discussion has arisen from time to time over the legal question: If a city ordinance gives pedestrians the right of way, is the owner of a motor vehicle which injures a pedestrian while violating the ordinance *always* liable in damages? The answer is *no.*

In *Stahl v. Cooper,* 190 Pac. (2d) 891, it was shown that a motor truck owned by the Hill Company struck and injured a pedestrian, who sued the company for damages. The pedestrian proved that a city ordinance gives pedestrians the right of way, and that the truck driver violated this ordinance.

Although the lower court held the company liable, the higher court reversed the verdict saying that such an ordinance does *not* render a vehicle owner an insurer of a pedestrian's safety, but requires him *only* to use "reasonable care" in yielding a right of way to the pedestrian.

Contractor Sues Hospital

According to a recent higher court a contractor *cannot* receive payment for "extra" work included in the bid form, although this work is not clearly specified in the contract.

For illustration, in *Pfotzer v. United Hospital,* 77 Fed. Supp. 390, it was shown that a contractor received *by mail* an invitation to bid on construction of a hospital. The bid form sent with the invitation specified that the contractor must use surplus excavated material for space grading and *without* additional payment. The contractor was awarded the contract, which did not plainly state that excavated material must be used for space grading. In subsequent litigation the higher court refused to allow extra payment to the contractor for such "extra" work. The court said: "Since the Bid Form was

Gorman-Rupp pumps in action on storm sewer job in Corpus Christi, operating at 20 ft. suction lift. Jay DePuy and E. C. DePuy, contractors, are using 14 Gorman-Rupp's on this job.

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We invite you to give these new Gorman-Rupp pumps an ON-THE-JOB test for your own satisfaction.

We back our claims with a money-back guarantee.

Made in all sizes: 7M - 10M - 15M - 20M - 40M - 90M - 125M

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a part of the Specifications and, therefore, a part of the Contract, it is clear that plaintiff (contractor) is not entitled to recover on this claim."

Usurious Finance Charge

All higher courts hold that it is valid for a seller to have a low *cash* price, and a *higher credit* price on quarry equipment. But it *is* illegal for a seller to charge a buyer on installment a finance charge *greater* than the lawful interest on the balance due on the purchasing price.

In *Associates Company v. Ligon,* 209 S. W. (2d) 218, it was shown that one Ligon, a quarry operator, agreed to pay a purchaser a specified price for equipment purchased on the installment payment plan.

The contract recited that the "cash price" of the equipment was $848, and the "total finance charge and insurance premium for which credit is extended" was $197.50.

The higher court held that the loan of $197.50 on the purchase price of the equipment was usurious because the finance charge was not a part of the credit price. Hence the purchaser could not be compelled to pay the amount due on his notes.

Bonus Charge

According to a recent higher court, you may pay *bonuses* to your employees without figuring these payments as regular wages, under the Fair Labor Standards Act.

See *Walling v. Frank Adam Company,* 163 Fed. (2d) 277. Here a company paid an employee $52 for a 40-hour week, or total $2,600 wages annually. The company also paid the employee a 10 percent bonus, or total $2,860 annually.

The court held that the company need not consider the "bonus" payments as wages when figuring overtime under the Fair Labor Standards Act.

Scow Capsized

Considerable discussion has arisen from time to time over the legal question: Who is liable when a scow, or other loaned equipment, is damaged or causes damage? The answer is: The one whose negligence caused the damage.

For example, in *Richmond Sand & Gravel Corporation v. Tidewater Const. Corporation,* 170 Fed. (2d) 392, the testimony showed facts, as follows: The Richmond Sand and Gravel Corporation delivered its scow *Janet McGeeney,* loaded with 533.19 tons of gravel or grits, to the Tidewater Construction Corporation near the latter's job site. Three days later Tidewater's tug shifted the *McGeeney* to a berth at the job site where unloading operations were begun. Before quitting time on that day 40 tons of gravel were unloaded. The scow was periodically inspected by Tidewater's night watchman and no appreciable water was in her hold until she was boarded the next morning, when she was found to be leaking rapidly. Despite all efforts to save

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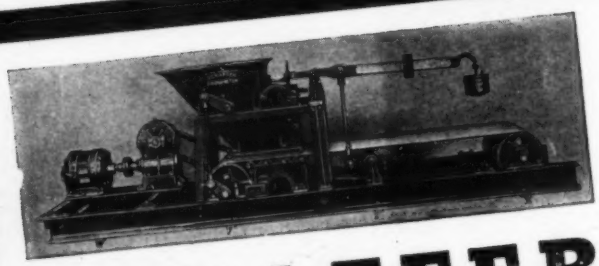

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her, she capsized with her deck riding over, and damaged equipment of the Tidewater Construction Corporation.

Suit was filed against the Richmond Sand and Gravel Corporation to recover $7,600 the damage to Tidewater's equipment and rig when the *McGeeney* capsized.

Richmond attempted to avoid liability on the ground that it delivered the scow to Tidewater in good condition and its sinking was caused by negligence of Tidewater.

The testimony showed that Tidewater used a two-inch centrifugal pump, driven by a gasoline engine, in full operation when the leak was discovered and it was still operating when the scow capsized.

In view of this testimony the higher court held the Richmond Sand and Gravel Corporation liable for value of Tidewater's damaged equipment and said:

"Richmond asserts that it is entitled to a verdict since it has proved that the *McGeeney* was in seaworthy state when delivered and that Tidewater failed to explain how the disaster occurred. . . . It is here sufficient if Tidewater's employees acted in the exercise of their best judgment and if the course they pursued was reasonable under the circumstances confronting them. The evidence does not support a finding that Tidewater was negligent in any way which contributed to the sinking. It must be concluded that the damage to the rig was caused solely by Richmond's breach of its contractual duty to deliver a seaworthy scow."

1948 Gypsum Production Tops 1947 Figure by Million Tons

Mine production of crude gypsum during the fourth quarter of 1948 was 1,826,677 short tons, and the total for the year 1948 reached 7,044,447 short tons, according to reports to the U. S. Bureau of Mines. This was nearly 1,000,000 tons above the output of the previous record year of 1947. Imports amounted to a total of 2,859,209 short tons, also a new record, making the apparent supply 19 percent above 1947.

Extensive modernization of existing facilities and expansion of capacity in response to very heavy demand have made possible a record production of most gypsum products. The construction boom and the general effort at maximum industrial output during the year were reflected in substantial increases in production of such items as portland cement retarder, fillers, gypsum for "gauging and molding" and "other" building plasters, and for the principal classifications of gypsum board.

During 1948 most plants were operated near capacity, and although shortages of some gypsum products were reported, these had largely disappeared by the end of the year. It is anticipated that the demand for gypsum products will remain strong during 1949, at about the level of 1948, and that production may increase slightly.

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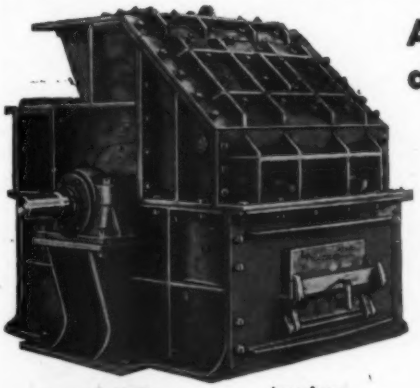

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traffic news

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 86812 (1) It is proposed to establish on crushed stone, crushed stone screenings, in bulk, in open-top cars only, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Bluffton, Ind., to Fort Wayne, Ind., 77c per net ton.

Docket 86816 (2) Establish on lime, common, hydrated, quick or slaked, carload, from Ludington, Mich., to Adrian, Mich., minimum weight 30,000 lbs., 26 cents; minimum weight 50,000 lbs., 22 cents.

Docket 86822 It is proposed to establish a rate of 105 cents per net ton on stone, crushed, in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Russellville, Ind., to Indianapolis, Ind.

Docket 86624 Proposed to establish a rate from Carey, O., to Ottawa, Ill., of 341 cents per gross ton in open-top cars; 374 cents per gross ton in closed cars, on stone, fluxing, furnace or foundry, melting or refractory (unburned), in bulk, carload minimum weight 90 per cent of marked capacity of car furnished, except that when car is loaded to full cubical or visible capacity, actual weight will apply.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-41-1059 (shipper) Proposed to establish a rate of $6.70 per ton of 2,000 lbs. on gypsum (dead-burned, unground) minimum weight 90 percent of marked capacity of car, but not less than 85,000 lbs., from Blue Rapids, Kan., and Medicine Lodge, Kan., to Easton, Pa., Easton (13th Street), Pa., and Easton (Bushkill Station), Pa.

PACIFIC FREIGHT TARIFF BUREAU
North Pacific Coast Freight Bureau Joint Docket

Docket JT-389—A request has been made for rate on lime, carload, from Evans, Wash., to Salt Lake City, Utah, of 57 cents per hundred-weight, minimum weight 60,000 pounds and 61 cents per hundred-weight, minimum 40,000 pounds, including X-162-B and X-166-C increases.

Trunk Line Territory

Supplement 1 to Trunk Line 42—It has been proposed to establish a rate of $2.53 per gross ton, on limestone, crude, fluxing, foundry and furnace, when shipped in open-top equipment, not protected by tarpaulin or other protective covering, carload minimum weight 90 percent of marked capacity of car, etc., from Security, Md., to Bethlehem, Pa. This rate includes ExParte 162-B and 166-C increases but is subject to Tariff of Emergency Charges X-169.

Western Trunk Line New Applications

Docket E-158-37—Proposed to establish on slag (a product of iron or steel blast or open-hearth furnaces) minimum weight 90 percent of marked capacity of car, but not less than 40,000 pounds, from Chicago, Ill., and Gary, Ind., to Addington Spur, Minn., $2.50 per net ton. This will not apply on expanded slag (construction material aggregate).

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 86833 (1)—Proposed to establish on gravel, carload, loaded in open-top cars without tarpaulin or other protective covering, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Camp 2 Siding, O., to Philo (Duncan Falls), O., 172 cents net ton.

Docket 86811 (2)—Sand, all kinds, and gravel, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to

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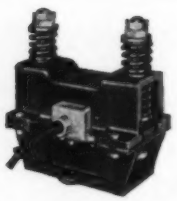

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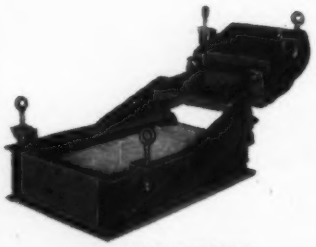

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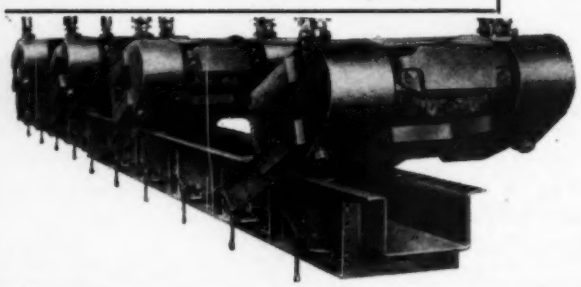

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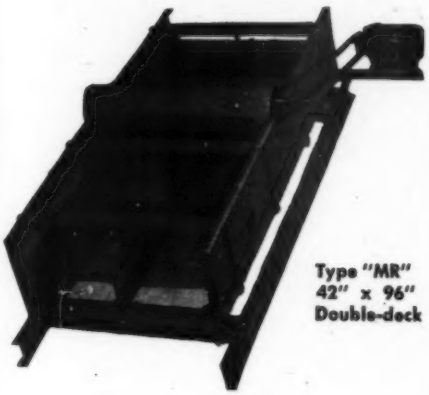

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Canton and Massillon	94
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Alliance	105
Canton, Massillon and Scio.	94
Loudonville	110
Bayard and Centerburg	99
Mineral City	88
Dover, Cambridge and Zanesville	66
Ellis	55
Washington Court House	127

1948 a Profitable Year For Nonmetallics Industries

Gypsum, sulphur and other nonmetallics made impressive gains in output, sales and earnings during 1948. For example, the International Minerals & Chemical Corporation rolled up a sales total of $50,123,269, the highest figure in the company's history. Net earnings were reported to be $5,016,028. According to Louis Ware, president, the outlook for phosphate production in the current year is as good as it was in 1948—probably better.

On the report of the United States Gypsum Company and its subsidiaries, net earnings for 1948 appeared as a record figure—$24,596,688, as against $16,541,744 in 1947. Sales were $148,555,269, a 37 percent gain over 1947.

Pacific Coast Aggregates, Inc., reported 1948 sales and earnings substantially higher than those for the previous year. Net profits jumped from $466,729 in 1947 to $662,920 in 1948.

The sales total for Jefferson Lake Sulphur Company, Inc., and subsidiary stood at $3,631,936 for 1948. For 1947, the figure was $3,699,086; but net profit showed an increase during 1948, when earnings reached $420,355, as compared with $380,318 in 1947.

The National Gypsum Company and subsidiaries, which reported total sales in 1947 amounting to $51,764,236, considerably bettered that figure in 1948. Records showed last year's sales were $68,125,235. Net profits for the two years were as follows: 1947—$5,273,120; 1948—$7,997,976.

Kelley Island Lime & Transport Company officials reported a profitable year in 1948, with a sales total of $9,721,261, a 32 percent increase over the 1947 figure. A net profit of $686,074 in 1948 brought $2.22 per share, as compared with $551,854 or $1.79 per share in 1947. Kelley Island's president, Ralph L. Dickey, predicts an even better year for the firm in 1949, provided that steel production continues at present levels.

Preliminary figures for 1948 reported by Cleveland Graphite Bronze show a net income of $3,064,000, as against $2,903,557 in 1947.

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Design features of this 36 x 30 E stone crusher include: (1) Meehanite frame, sectionalized when necessary; (2) removable water cooled bearings; (3) improved design of swing jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive.

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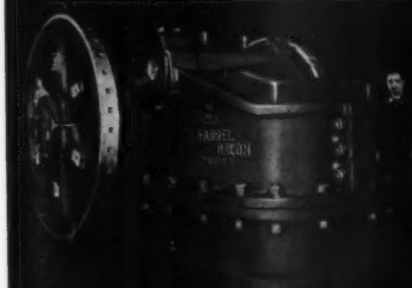

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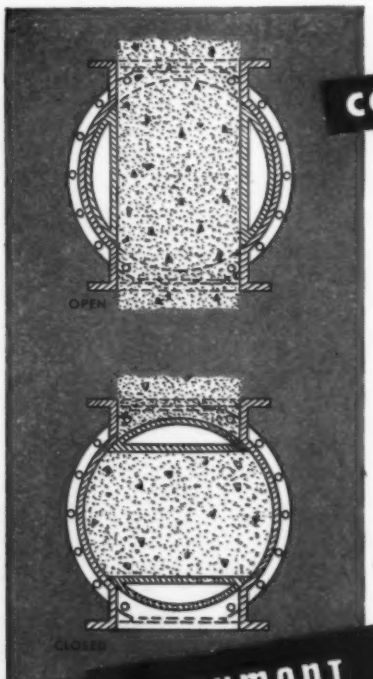

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NEWS OF CONCRETE MANUFACTURERS

Robot Handling Device Will Be Manufactured By Kent Machine Co.

The Kent Machine Co. of Cuyahoga Falls, O., is taking over the manufacture and distribution of the William Moors Concrete Products Company's straight-line block handling system. This system was recently awarded the $500 Thomas W. Noble prize for the most important contribution to the concrete masonry unit industry. It was selected from entries submitted by 12 plants entered in the N.C.M.A. competition.

This development in block handling is an approximation of the straight-line system of manufacturing which has been applied so successfully by the automotive industry. In this system, the concrete masonry units are handled mechanically from the time the units are taken from the curing room until they are cubed for yard storage or job delivery.

It is claimed that the masonry block handling device, which is the heart of the straight-line handling system, effects a significant increase in the efficiency of the block machine, along with important economies in respect to labor efficiency.

The system will be named the Kent "Blockmatic Robot Handling System". The first installation will be made at the Acme Block Company's plant in Milwaukee, Wis.

H. C. Shirley Heads C.M.M.A. Of Southern California

Homer C. Shirley (Superior Concrete Block & Building Supply Company, Temple City, Calif.) was elected president of the Concrete Masonry Manufacturers Assn. of Southern California at the annual dinner meeting of the organization held on February 22, 1949, in Los Angeles. William A. Grindle (San Joaquin Blocklite Company, Selma, Calif.) was named vice-president; L. B. Garber (Pomona Concrete Block & Products Company, North Pomona, Calif.) was chosen secretary-treasurer. Clif Hendrickson continues as executive secretary-manager with offices at 3160 W. 6th St., Los Angeles.

It was brought out at the meeting that there were only 12 members of the organization a year ago. As the result of an active year during 1948, total membership now stands at 137.

During the year the association sponsored the Triplett & Bartlett cooperative testing program for its members. The building and safety departments of 55 cities and towns—among them Los Angeles, Long Beach, San Diego and even far-off Tucson, Ariz.—have accepted the tests as standard. As a result, concrete-products makers have saved thousands of dollars which would otherwise have been expended by them individually for the required tests.

• Jack Allen (left), retiring president of the Concrete Masonry Manufacturers Assn. of Southern California, passes the gavel to the newly-elected president, Homer C. Shirley (right). Clif Hendrickson, executive-secretary (center), congratulates both.

The association's Detail "M" Sheet, prepared by Mackintosh & Mackintosh and revised in 1948, is being accepted by scores of city and county building departments as standard when plans are reviewed and approved for permits.

The organization is issuing regular newspaper releases to all California papers to promote the use of concrete masonry, and members are cooperating by calling in person on their local newspapers and arranging for publication of the news stories.

The plan of monthly dinner meetings, inaugurated last year, will be continued during 1949. Attendance at the meetings has been averaging about 60 persons.

George A. Mansfield has recently joined the staff of William Motors Concrete Products at Fraser, Mich., after resigning from his position as technical service director and division sales manager for the Huron Portland Cement Company of Detroit.

Coming Events

April 21-22, 1949—Chicago. Annual convention, Wabash Valley Ready-Mixed Concrete Association, Stevens Hotel.

June 27 - July 1, 1949 — Atlantic City. Fifty-second annual meeting, American Society for Testing Materials, Hotel Chalfonte-Haddon Hall.

Prefab Concrete Planks Grow from Cinder Blocks At Fraser, Mich., Plant

Planks of concrete, which are adaptable for use in constructing floors and roofs, are produced by means of the Dox system at the plant of Concrete Plank, Inc., at Fraser, Mich. This firm, a licensed producer of the slabs, is a subsidiary of William Moors Concrete Products.

Cored cinder blocks 6 in. deep and 16 in. wide are "assembled" to form the planks to the desired length. Precision grinding of core ends prepares the units for the assembly, which is accomplished by passing a clamping rod through the center cores. Two semi-circular slots are molded in one face of the block to form continuous channels. These receive a high-strength grout into which reinforcing bars are embedded by vibration. After curing the clamps are removed and planks are put in position on the job with the reinforcing bars in the bottom face. An interlock of the planks is secured by the tongue and groove molded into the sides of the block. The 1-in. topping forms a rigid structural slab. Maximum span allowed is 20 ft.

During the National Concrete Masonry Association meeting held recently at Cleveland, O., the William Moors Concrete Products Co. was awarded the Thomas W. Noble prize for contributing the most important developments to the concrete products industry during 1948. George A. Mansfield, general manager of Concrete Plank, Inc., was honored by being appointed to the general technical committee of the N.C.M.A.

Expansion and Modernization To Double Layrite Output

Expansion plans and improvements have been announced for the Layrite Company at Kennewick, Wash., by R. W. Ross, manager. It is expected that as a result of the improvements and added equipment the output of concrete and pumice block will be doubled. The new figure would approximate 25,000 units per 24-hour day.

A new office building will house a private office, a salesroom, a business department and a warehouse for sample products made at the plant.

Edward F. Cobb, who was engaged for 35 years as a salesman for the old Vulcanite Portland Cement Company, now out of existence, died on February 1 at his home in a suburb of Philadelphia, Pa. He was 72 years of age.

• Left: Clyde Wilson, Universal crib machine operator, is shown pulling the lever which raises a "header" from the tamping groove.
• Right: Roy Cain (left) and V. R. Jackson (right) check cribbing which has been placed on racks to cure.

Universal Concrete Pipe Co. Builds Cribbing Machine

The Universal Concrete Pipe Company of Columbus, O., has built, for its own use, what is believed to be the first cribbing machine in the country.

At its Columbus plant, Universal now makes concrete cribbing strictly by machine. During a 6½-hour period, 132 "header"-type pieces 6 ft. in length can be made on the Universal machine.

The cribbing can be used for railroad and highway embankment retaining walls, flood control and levees, soil erosion work, loading docks, bridge abutments, grade crossings and the conservation of valuable industrial property.

Brunson Named Manager of Black-Brollier Sales Dept.

F. H. Brunson

Frank H. Brunson has been appointed sales manager of Black-Brollier, Inc., Houston (Tex.) building materials firm located at 3010 Dixie Drive. The announcement was made by Ernest Black, company official.

Mr. Brunson, who has been in the building materials field in Houston and New Orleans for the last 10 years, will direct and coordinate the company's sales activities. Black-Brollier manufactures "Featherlite" and concrete tile along with a full line of related concrete products.

Portland Cement Association Loses Arthur J. Boase

Arthur J. Boase, 56, for the last 16 years manager of the Structural and Railways Bureau of the Portland Cement Association, died of a heart attack in his office on February 9, 1949.

Mr. Boase was an internationally known authority in the field of reinforced concrete design. He traveled extensively for the association in Europe in 1936, studying European practice in reinforced concrete design. In 1944, he was granted a leave of absence from the association to visit South America and to write an extensive series of articles on the design and construction methods of South American engineers and architects in the field of reinforced concrete building.

Marietta Concrete Corp. Builds $250,000 Aglite Plant

At Marietta, O., the Marietta Concrete Corporation has begun the erection of a new $250,000 plant for the manufacture of "Aglite," a lightweight aggregate composed of fused clay or shale.

According to F. L. Christy, president of the firm, the plant will be the first installation of its kind in the United States. It is expected to have a capacity of 20 to 30 carloads daily, and is scheduled to be in operation by June 1.

Mr. Christy stated that blocks and staves made from the new product are lightweight and high in insulating qualities. He also announced the development of a hollow wall stave for use in the construction of farm, industrial and commercial buildings.

Seabee Brand Perseverance Plus Bonuses Equal Success

Determination and the incentive plan proved an unbeatable combination that saved an Indianapolis block concern from insolvency. It was James Madden, ex-Seabee, who figured it out.

Local gossip says that Jim Madden got into the business through the side door. With his four trucks he had been delivering block on contract for the Patterson Block & Materials, Inc., 2800 E. 71st Street. When he was approached by Chester Zechiel, chief Patterson stockholder, with the proposition that he turn in his trucks for stock in the company, he accepted the invitation. A few months later the plant burned and the two men decided to build a new one.

Within three months a new fireproof concrete and steel plant had been erected and business was rolling with new equipment. Then a new problem threatened the firm. With a daily output of 3000 blocks, Mr. Madden saw that the company was not getting a large enough margin. He suggested that the crew boost production to 4000 per day, promising a "bonus" of 1 cent for each unit over 4000. The plan worked like magic. Production costs went down; output and the average wage jumped; and profits climbed from 8 percent to 20 percent.

Associated with Mr. Madden is another ex-serviceman, a former Army captain, Gilbert Sheely, who is secretary of the firm. That ex-Seabee is executive vice-president and general manager.

Garrett to Double Output With Second Block Plant

O. E. Garrett, proprietor of the Mount Carmel (Ill.) Concrete Block Company, has announced that he recently purchased the Eastwood concrete Block Company of Grayville, Ill. The Grayville plant has been operated by the Eastwood Sand and Gravel Company.

Mr. Garrett stated that the newly-acquired plant has approximately the same capacity as his Mount Carmel facilities; thus he will double his output. The plant at Grayville is equipped to produce 4-in. block and brick in various colors, in addition to units of larger sizes.

American Concrete Pipe Assn. Adds W. F. Perley to Staff

In accordance with instructions from the board of the American Concrete Pipe Association, W. F. Perley has been retained as assistant to Managing Director Howard F. Peckworth. This action was taken on January 1.

Mr. Perley, a graduate of the University of Iowa, had been previously associated with Ford, Bacon & Davis, the United States Engineer Corps, the Sanitary Corps of the Army and the Air Transport Command of the Air Forces.

Frederick E. Beck, operator of the Beck Concrete Products Company at Elizabethtown, Ky., died unexpectedly on February 7 in that city. Mr. Beck founded the products firm in 1944.

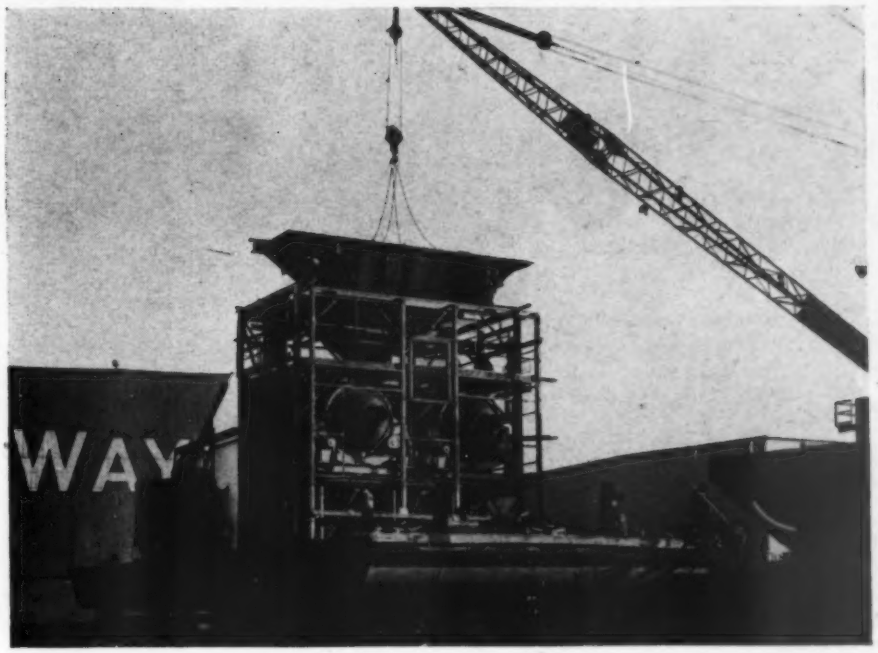
Floating Concrete Plant To Be Used by Dravo In Dam Construction

Remodeling work is underway now on a concrete mixer boat at Dravo Corporation's Marine Ways, Pittsburgh. Dravo's Contracting Division will use the vessel in the construction of a new lock and dam for the Corps of Engineers, U. S. Army, on the Monongahela River at Morgantown, W. Va.

The hull is being lengthened 10 feet and two tilting-type concrete mixers and accessories are being installed. The floating plant will be able to produce approximately 80 cu. yds. of concrete per hour. Different mixes of concrete needed for the dam can be prepared on the boat.

Sand, gravel and cement are loaded into the boat's batchers with a whirler crane. Other cranes will lift buckets of concrete from the boat for transportation to the pouring location at the dam via small rail cars.

The remodeled vessel is scheduled to go into operation about March 1. Meanwhile, The Contracting Division is building a cofferdam at the site of the new structure to detour the water flow in the river while the permanent dam and lock are being erected.



• Partially remodeled concrete mixer boat of Dravo Corp. at Pittsburgh.

Dunbrik Is Introduced To Gulfport by Three Anthonys

A newcomer to the industrial family of Gulfport, Miss., is the Gulfport Brick Manufacturing Co., which has been operated since October, 1948, by T. W., A. G., and K. Z. Anthony. This firm turns out Dunbrik, a concrete product, in five shades, and reports plant tests on units which withstood 3,817 pounds of pressure.

Tests for absorption also show a completely satisfactory score—only 5.5 percent of a unit's weight being absorbed after submersion in water for 24 hours.

• Among the more than 50 active and associate members and guests of the Ohio Ready Mixed Concrete Association attending a luncheon meeting at the Hotel New Yorker on February 16 during the annual convention of the National Ready Mixed Concrete Association were (left to right): Robert Coe (Basic Construction Materials Co.), W. D. M. Allan (Portland Cement Assn.), one of the guest speakers, H. G. Feraud (Southern California Rock Products Assn.) and Ray V. Warren (Ready Mixed Concrete Assn. of Metropolitan Pittsburgh).

Claude L. Clark, executive secretary of the organization, presented a brief analysis of the 1949 business outlook in Ohio, and reviewed some of the pending legislative developments affecting producers of ready-mixed concrete. Principal speaker at the meeting was W. D. M. Allan, director of promotion for the Portland Cement Assn. Mr. Allan described a 2-year program of instruction in quality concrete which the P.C.A. has launched in the hope of providing basic training for between 30,000 and 40,000 individuals who use concrete. Future business, Mr. Allan said, depends in a very large measure on the production of quality concrete now, and the proper use of the material in structures which will have long life at low maintenance cost.

Hickham Brick Co. Acquires National Pre-Cast Rights

The Hickham Brick Company of New Orleans, La., recently purchased the sole rights to manufacture and sell the National Pre-Cast line of fully reinforced precast concrete steps, stoops, stairs and porches in the parishes of Orleans, St. Bernard, Jefferson and St. Charles. The transaction was handled by National Pre-Cast Sales & Service of Baton Rouge, La., in October, 1948, and the first installation was made January 13, 1949.

Perlite Used in Construction Of Light Concrete Pontoons

One of the newest industries of Vallejo, Calif., is that of the Tellefsen-Hill Perlite Concrete Corp., which also operates plants at La Jolla, Calif., and Seattle, Wash. Products of the concern are lightweight concrete pontoons and other marine items.

Facilities of the firm were scheduled to be moved to Vallejo from the Pittsburg, Calif., area. Tellefsen-Hill is said to be the only firm to date which uses perlite for marine constructions.

Gelbmans Represent Stearns In New York City Area

Martin and Lawrence Gelbman, who have long been associated with their father, Louis Gelbman, in the operation of his concrete products plant, and in the development of his various inventions, have joined the Stearns Manufacturing Company, Inc., Adrian, Mich.

They will represent Stearns in the Metropolitan New York area.

John L. Strandberg, Concrete Building Units Co., Kansas City, Mo., was recently appointed to the five-man advisory committee for construction of the Kansas City Home Builders' Association.

Lined up before the plant of the Turbotville Block Co., Inc., Turbotville, Pa., is the company's fleet of 14 carrier trucks. Concrete blocks are hauled from this plant for one-way distances up to 170 miles.

Blocks F.O.B. Turbotville

By EDWARD J. BRUNENKANT

IN the 20-odd years since its inception, concrete block production at the Turbotville Block Co., Inc., has far oustripped demand in the small town of Turbotville, Pa., wherein the plant is located. Output has jumped from the meager 200 blocks that characterized the daily production of the 1928 facilities to more than 20,000 standard 8- by 8- by 16-in. equivalents produced every 24 hours in the present plant.

With the steady gain in production recorded each year since 1928, except 1936, it became necessary for the company to go farther and farther afield to dispose of the plant's output. Rather than face the gloomy alternative of artificially limiting the natural growth and expansion of a young and virile business, the company has built up a fleet of trucks to carry Turbotville concrete products to widespread areas of demand.

Today a line of 14 Brockway motor carriers are hauling the company's blocks for distances ranging from 70 to 170 miles (one way). Anyone of the company's 11 flat-bed semi-trailers will haul a maximum of 1050 cinder blocks or 950 heavyweight 8-in. units—a weight limit rather rigidly set by the 45,000-lb. Pennsylvania gross road load. Prices for both cinder and regular block units are computed f.o.b. Turbotville. On top of this, a nominal charge is assessed, on a mileage basis, for delivered lots. In addition to providing prompt delivery to job sites or material yards anywhere within 170 miles of Turbotville at competitive costs, the company also expressedly guarantees its products. Only a few times through the years has the company been called upon to make good on its warranty. However this "certificate of good faith" has been of immeasurable worth in establishing Turbotville concrete products as quality merchandise.

Allen G. Stamm stands beside his 4-passenger plane, which he pilots on business trips.

In order to better meet the keen competition for markets, especially in and about the larger Pennsylvania cities, the company completely dismantled its old plant in August, 1945, and started from scratch to build a labor-saving, high-capacity, modern block-producing facility. Incorporating the latest in Besser high-production block machinery, and integrating this equipment with the plant design of the company's president, Allen G. Stamm, has given the new plant a daily capacity of 20,000

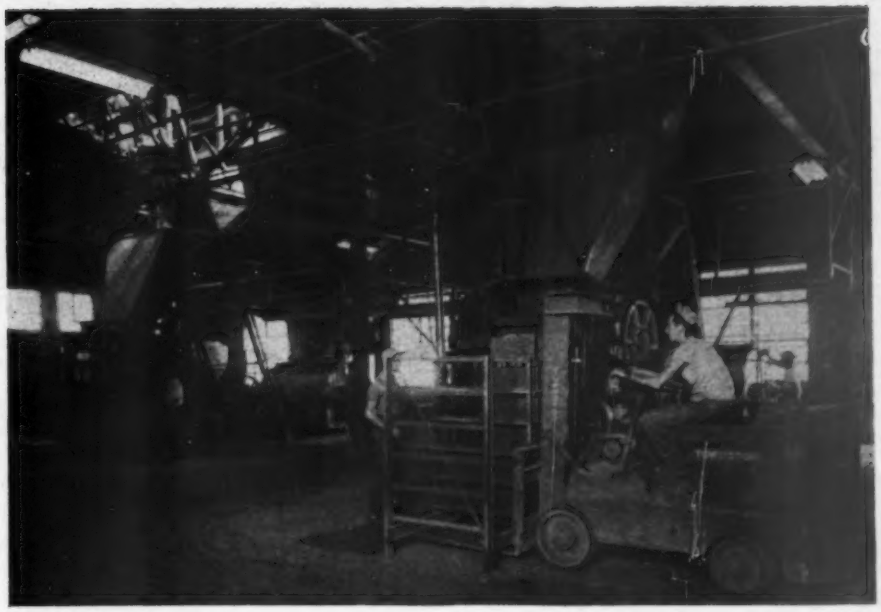
8-in. equivalents, or nearly 2½ times the output of the old plant.

Approximately 50 percent of this output is cinder block. The unprocessed cinders are bought from a print and dye company about 30 miles from Turbotville. Both cinders and stone aggregates are trucked in. The cinders are cured in outside storage piles, approximately 20,000 tons being kept on hand at all times. Bulk cement, hi-early-strength variety when available, is stored in a 300-ton Heltzel steel bin at the yard, or in a second 100-ton bin of the same make erected at the railroad station in town. All aggregates are moved from their respective stockpiles to a belt elevator with two tractors, one International and one Case, fitted with either blades or buckets. A four-compartment bin, one-compartment for cement, and three for aggregates, provides ample overhead storage for batching operations.

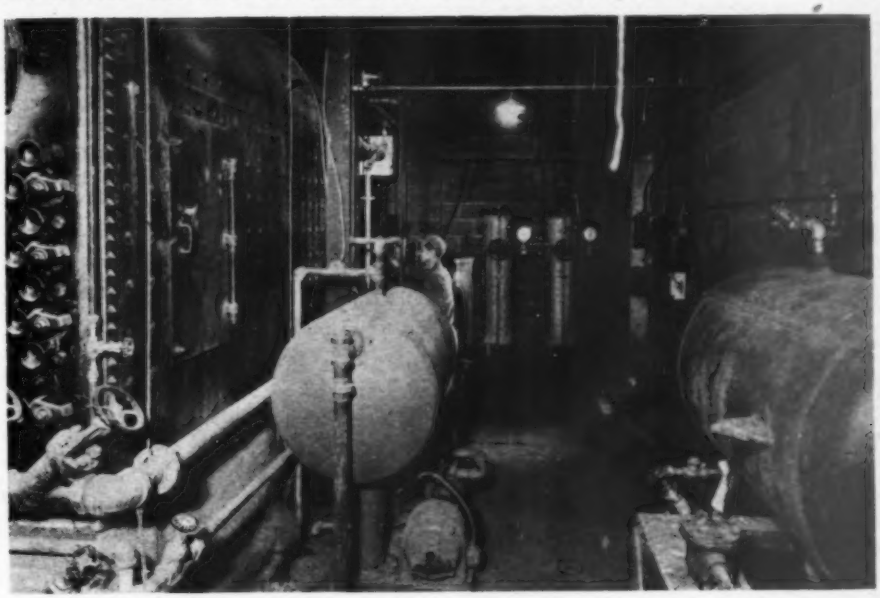
The two 50-cu. ft. Besser mixers are charged with a two-rail traveling Heltzel weigh batcher which is automatically postioned over each mixer by means of limit switches. By keeping the mixers and block machines on a common level, one man can handle a mixer and, at the same time, load empty pallets in back of the machine.

Green blocks coming off the two Besser super Vibrapacs, are loaded on steel racks, 72 units to a rack, and moved to the curing rooms with a LT-50 Towmotor fork lift-truck. When present alterations are completed, there will be five kilns, all enclosed at one end by a common wall. Each individual curing room measures 12 ft. wide, 7 ft. high, by 70 ft. in length, and holds 2880 8-in. equivalents or 40 racks.

(*Continued on page* 137)



An interior view of the new plant, showing the two high-capacity block machines and a fork lift-truck which moves the loaded steel racks into the curing rooms.



A modern boiler room provides steam for curing operations and for the aggregate bins, which are heated during the winter months.

Two 5-prong lift-trucks load one of the flat-bed trucks. To keep within the allowable state road weight, only 1050 cinder blocks (or 950 heavy-weight units) are loaded on any single vehicle.

Ready-Mix Producers Gird for Buyer's Market at Convention in New York

Sales Techniques, Market Research, Safety Programs and Quality Control Hold Spotlight at 3-Day Session

• The new 1949 officers elected at the 19th annual convention of the National Ready Mixed Concrete Assn.: Norman J. Fredericks, secretary-treasurer; Robert F. Porter, president; and William Moore, vice-president.

THE National Ready Mixed Concrete Assn. held its 19th annual convention at the Hotel New Yorker, New York City, during the week of February 14, 1949. Meeting sessions of the gathering were for the first time completely combined with those of the 33rd annual

By WILLIAM M. AVERY

convention of the National Sand & Gravel Assn. Combined registration of the two groups was close to a thousand, a new high for a year in which there were no machinery exhibits.

In this report reference will be made only to those matters covered which are directly related to ready-mixed concrete operations. Those subjects which primarily affect sand and gravel producers are reported in the main section of PIT AND QUARRY.

Robert F. Porter, Harry T. Campbell Sons Corp., Towson, Md., was elected president of the ready-mixed concrete group at the close of the convention. He succeeds C. "Dolly" Gray in that important office. William Moore, J. P. O'Connell Co., Boston, Mass., became the new vice-president, and Norman J. Fredericks, Koenig Coal & Supply Co., Detroit, Mich., was elected secretary-treasurer. In addition, four new members were elected to the association's board of directors to fill vacancies created by terms which expired with the 1949 convention. The new members are: Louis C. Schilling, I. E. Schilling Co., Miami, Fla.; Frank E. Schouweiler, Old Fort Supply Co., Fort Wayne, Ind.; Frank L. Kelly, Colonial Sand & Stone Co., New York City; and Frank Penepacker, Readymix Concrete Co., Portland, Ore.

Address of President In his opening remarks at the first formal session, C. "Dolly" Gray, president of the association, reviewed briefly the early history and development of the organization. He pointed out that at least 85 percent of the concrete mixed in cities of 20,000 or more population (excluding Chicago) is delivered to the job site by ready-mixed concrete producers, the majority of whom are members of the association.

Mr. Gray paid warm tribute to Vince Ahearn and Stanton Walker for the outstanding services which they have rendered to the industry in general, as well as to members of the association, in their respective offices. Through their untiring efforts, combined with the efforts of individual producers, he stated, contractors, engineers and architects have been completely sold on the advantages of ready-mixed concrete.

According to Mr. Gray the association showed a net gain of 55 members during 1948, bringing the total to 342 active members and 45 associates. He also referred to the fact that production of member companies in 1948 was 18 percent higher than in 1947, despite the disturbing effect of cement shortages.

Ahearn's Report Vincent P. Ahearn, executive secretary of the association, estimated the industry's 1948 output at 25,000,000 cu. yds. with a delivered value of approximately $250,000,000. This represented a gain of almost 4,000,000 cu. yds. over 1947. According to Mr. Ahearn, the association now represents about 80 percent of total production in the industry.

Mr. Ahearn urged member companies to participate in the association's annual safety competition, the response to which has so far been extremely poor. Because the industry must transport its product over public thoroughfares, he said, its attitude toward safety and public relations is particularly important.

In referring to the importance of maintaining good employer-employee relations, Mr. Ahearn stressed the point that unions respect employers who actually bargain collectively on the basis of authoritative advice. He said that employers should make written proposals for contract improvement in order to avoid being perpetually in the position of having to say "No to union demands. Union contracts within the ready-mixed concrete industry, Mr. Ahearn feels, have shown much improvement in the past few years.

Walker's Report Stanton Walker, director of engineering, devoted a large portion of his formal report to a discussion of the many research problems related to concrete. He mentioned that the research laboratory already has some

work in progress on the problem of chemical reactions between aggregates and cement.

Mr. Walker believes that in the field of air entrainment there should be considerable additional testing in regard to the effect of entrained air on strength, workability, and bleeding, as well as on durability. Air entrainment, he said, appears to improve all concrete, and its efficacy in improving the performance of questionable sand in concrete is strongly supported by laboratory tests. He urged that further investigations should include not only studies of air entrainment *per se,* but also of different air-entraining agents.

Studies should also be made of cement, Mr. Walker said, to make adequately clear the important role which quality of cement plays in determining the quality of concrete. The widespread use of air entrainment, he pointed out, gives added importance to studies of time of mixing. The latter, he added, may be found to have a significant effect on the change in volume of concrete as it goes from a plastic state to a hardened state.

Safety Program In discussing the safety program of Consolidated Rock Products Co., Robert Mitchell, president, made the point that every traffic accident involving a concrete mixer truck creates a bad impression for the industry. He stated that if producers can demonstrate that they are interested in safety for their employees and for the general public, they may reasonably expect reciprocal good will and sympathetic understanding of their problems.

• Left: Harry F. Thomson, consultant (center), presents the Class A ready-mixed concrete safety trophy to J. E. Clark of Lubbock Building Products Co., Lubbock, Tex. At the left, T. E. Popplewell, president of the National Sand and Gravel Association.

• Right: Winner of the Class B safety trophy was Pocahontas Inc., Salisbury, Md. Here Mr. Thomson presents the Pit and Quarry bronze plaque to S. Norman Holland Jr., who represented the winning company.

Mr. Mitchell's company employs 850 men, every one of whom is covered by a safety program carried on under the direction of a full-time safety engineer. Each plant has a safety committee which meets with the safety engineer at least once a month to discuss and make recommendations regarding hazardous conditions and accidents which have occurred.

All plants compete for the safety trophies in the contests sponsored by the two associations. In addition to this, the company itself awards a small white elephant each month to the plant or branch having the most personal injury accidents. The elephant must be displayed on the desk of the plant superintendent. According to Mr. Mitchell the superintendents who receive this recognition are invariably anxious to pass it on to some other department as quickly as possible.

In the transportation division of its safety program the company issues honor certificates to truck drivers in recognition of no-accident records. These indicate the number of months driven without an accident or citation for traffic violation. The drivers themselves have a traffic court before which each driver who is involved in an accident has an opportunity to explain the circumstances. After all the facts are presented, a secret ballot is taken by the judges and the degree of responsibility fixed.

A comprehensive safety program, Mr. Mitchell said in conclusion, is like a game in which the stakes are

• One of the outstanding sessions of the convention was an open forum on design of concrete mixtures. The discussion was led by Stanton Walker (center), assisted by Fred F. Bartel (left) and Delmar L. Bloem (right).

big and worthwhile. A good safety program pays off in substantial money savings, increased efficiency, happier workers, more respect for the boss, public good will, and general satisfaction.

Safety Awards Following Mr. Mitchell's address, the two safety trophies donated by PIT AND QUARRY were presented to winners of the association's 1947-48 safety competition. Winner of the Class A trophy was the Lubbock Building Products Co. of Lubbock, Tex. The Class B trophy went to Pocahontas, Inc., of Salisbury, Md.

Employer-Employee Relations In an evening session on the first day of the joint convention, Vincent P. Ahearn, Charles A. Horsky and Kenneth E. Tobin, Jr., acted as moderators for an open forum discussion of employer-employee relations. By way of introduction, Mr. Ahearn pointed out that the Bay Ridge Decision is of considerable interest to both industries (sand and gravel and ready-mixed concrete) because in certain instances it requires the payment of overtime on overtime. Some of the more drastic effects of the decision, he stated, have fortunately been modified by subsequent rulings of the Wage and Hour Administrator, and the requirements are now fairly explicit and not too difficult to meet.

To illustrate how the decision affects the computation of wages, Mr. Tobin worked out several typical examples, based on an hourly rate of $1.00, with time and a half over 40 hours and double time on Sunday. In the first example, for a work week beginning on Thursday, it was shown that the wage due under the contract for six 8-hr. days (no work on Sunday) was $52.00, whereas the computed wage under present law was $56.32. Based on the contract, the wage was $48.00 (for straight time) plus $4.00 (for overtime). The change effected by the Bay Ridge Decision required payment based on a computed regular rate (for overtime) of $1.08 per hour ($52.00 ÷ 48 hrs.), or $52.00 + 8 ($1.08 ÷ 2) = $56.32.

In the second example it was shown that had the work week commenced at 12:00 a.m. on Monday, the amount due under the Wage and Hour Act would have been $52.00, just as it was under the contract. Other examples were used to show the effect of a holiday within the work week. It was pointed out that the distinctions generally hinge on whether or not premium pay is for working undesirable hours. If it is, such premium pay must be included in computing each employee's regular rate in order to determine the amount of overtime pay actually due. If the premium pay is for overtime only, it need not be included in computing the regular rate of pay.

Another point brought out in connection with computing regular rates was that insurance premiums paid by the employer need not be included. This was also said to apply to bonuses paid out at Christmas or the end of the year, provided such payments are discretionary with the employer. It is of the utmost importance, Mr. Ahearn said in concluding the discussion, for employers to begin the work week on Monday regardless of the day of the week in which actual payment is made.

Mr. Horsky discussed briefly some of the provisions which the Truman Administration would like to incorporate into a law repealing the Taft-Hartley Act and reinstating the Wagner Act with certain amendments. He made it clear, however, that it is much too soon to do more than guess at the ultimate form of the new law. Some fair possibilities: no communist oath; no union obligation to bargain collectively; no ban on political contributions by unions; limitation on secondary boycott ban to those instances in which the action is taken to compel other employers not to recognize a certified union.

Air Entrainment *Effect of Air Entrainment on Resistance to Freezing and Thawing of Concrete Made with Questionable Aggregate* was the title of a paper presented by Fred F. Bartel, assistant director of engineering, National Sand & Gravel Assn. Mr. Bartel summarized data from a series of freezing and thawing tests in which aggregate was the principal variable. Five sands ranging in soundness from excellent to poor and six miscellaneous coarse aggregates were used in both normal and air-entraining concrete. The effects of freezing and thawing were determined at intervals during the test by dynamic measurement of the modulus of elasticity of the concrete.

For the five sands studied, air-entraining concrete showed uniformly high resistance to freezing and thawing, regardless of the sand used. In normal, air-free concrete, however, results varied from excellent to poor, depending on the sand used. Although the entrainment of air improved the resistance of concrete made with the six coarse aggregates studied, not all air-entraining concrete showed the same order of performance. It was Mr. Bartel's conclusion that the effects of air-entrainment in relation to coarse aggregates must be studied for each aggregate.

Similar tests were made of normal and air-entraining concrete made with five Type I cements. Normal concretes showed wide variations in resistance, whereas the air-entraining group showed uniformly high resistance for all cements used. In the net, all the tests seemed to indicate that it is the entrained air, and not the admixture *per se*, which improves resistance to freezing and thawing. It was found that even quite small variations in the air content of normal concrete may significantly affect durability.

Effect of Admixtures In a related paper Delmar L. Bloem, associate research engineer, discussed the effects of various admixtures on air entrainment, water requirement, and compressive strength of concrete. From tests involving 13 different admixtures (referred to only by type) Mr. Bloem drew the following general conclusions:

1) When proper allowance was made in the design for their effects on concrete characteristics, none of the admixtures tested caused excessive loss of strength.

2) Although the required dosage of the various admixtures differed over a wide range, such differences appeared not to provide any fair basis for judgment or comparison.

3) Generally, admixtures which permitted the largest reductions in water content produced the strongest concretes. Admixtures which were classified as containing detergents or dispersing agents in most cases performed better than the resin type foaming agents or those containing bituminous compounds. Those classified as containing both dispersing and accelerating agents produced the highest relative strengths.

4) With one exception all the admixtures tested produced higher relative strengths at 7 days than at any later age, indicating that a higher proportion of the strength was gained at the early ages than for the normal concrete.

Design Forum One of the outstanding sessions of the entire 4-day meeting was an open forum on the design of concrete mixtures, in which Stanton Walker, director of engineering, acted as moderator. He was assisted by Mr. Bartel and Mr. Bloem. Tables and dia-

grams were passed out to provide basic information for the approximate solution of typical concrete mixture design problems. A number of such problems were solved on blackboards in plain view of the large audience, and detailed explanations were given of each of the calculations involved.

Unfortunately, it is beyond the scope of this report to present a step-by-step analysis of the calculations. As a hop, skip and jump version of the association's annual short course of instruction in the design and control of concrete mixes, the session in New York was outstandingly successful, and it seems virtually certain that many who attended will want to follow up with the more detailed instruction offered in the short course.

• Roy S. Krage (Ready Mixed Concrete Co.), C. W. Shirey and Milford L. Hunt (C. W. Shirey Co.), John W. Murphy (Union Sand & Gravel Co.), Arthur J. Bryce (Certified Concrete Co.), and R. V. Roupe (Crown Concrete Co.)

Lightweight Aggregates *Lightweight Aggregates for Concrete* was the title of a paper written jointly by Oliver C. Ralston, Metallurgical Division, Bureau of Mines, and John E. Conley, Eastern Experimental Station, College Park, Md. The presentation was made by John Ruppert, Chemical Division, Bureau of Mines.

The history of lightweight aggregates was traced back to the time of the Roman Empire, as evidenced by large pieces of pumice which have been found incorporated within the walls and ruins of the domes of buildings. It was pointed out, however, that from the fall of the Empire until comparatively recent times little effort was made to produce lightweight aggregates for general use.

Most of the better known advantages of lightweight aggregates in both precast and monolithic concrete were reviewed briefly, and mention was made of some of the more important factors in the production of such materials. The latter included reference to the importance of inexpensive raw materials which can be delivered to stockpiles at favorable costs, proximity of productive facilities to the market area, and the basic necessity of minimum preliminary treatment and low over-all production costs. Among the desirable qualities of lightweight aggregate for concrete, the authors stated, are a high strength-weight ratio, good workability, relatively low bulk density to assure light weight, low water absorption, and high concrete yield for cement economy.

Three general groups of raw materials were noted: (1) natural aggregates—typified by pumice or bubbly lava that is taken from volcanic deposits and merely crushed, sized, and graded; (2) coal cinders, fly ash or metallurgical slags obtained as by-products, which require relatively simple treatment to become acceptable lightweight aggregates; (3) process materials that are given specific heat and furnace treatments to produce the expanded or bloated lightweight aggregate characteristics.

There followed a somewhat detailed discussion of the mechanism of expanding clays, shales, and related materials, along with a specific listing of the advantages of artificial bloated aggregates.

Open discussion of the subject of lightweight aggregates was led by John W. Roberts, Southern Materials Co., Inc., and M. Eugene Sundt, Albuquerque Gravel Products Co. Mr. Roberts made brief reference to a lightweight aggregate called Solite[1] which his company is now producing. This development came about, he said, out of the company's desire to be in position to bid on concrete for all portions of structures rather than just for foundations and floor slabs.

Mr. Sundt stated that architects in the Albuquerque area virtually forced his company to produce lightweight ready-mixed concrete. Originally the plant was set up to handle only vermiculite concrete, but more recently pumice was added. In a 5-sack mix with 4-in. slump, Mr. Sundt said, straight pumice aggregate yields concrete of well over 1,000 p.s.i. Structural concrete which will test 3,000 p.s.i can be produced with pumice by increasing cement content to 11.9 sacks per cu. yd. As a word of caution, the speaker pointed out that mixing water should be used sparingly, since a slump of only 2 in. with pumice gives about the same workability as 4 in. with heavyweight aggregates.

Sampling and Testing Julius J. Warner, Richter Concrete Corp., Cincinnati, O., presented a brief report on recommended practices for sampling and testing ready-mixed concrete, as developed by a committee of the association under his chairmanship. He stated that producers of ready-mixed concrete are not seeking special consideration for their product, but that there is considerable feeling within the industry that the benefits of present knowledge, skill, and control facilities are being nullified in many instances by out-and-out carelessness in sampling and testing.

After careful exploration of the whole testing problem, his committee started initial work in collaboration with the engineering division of the association, on a set of rules or recommended practices. A rough draft was subsequently mailed to interested individuals and organizations for review, and their comments were incorporated in preparing a final draft.

Mr. Walker explained that the completed pamphlet, copies of which are now available at association headquarters, contains very little really new information on the subject of sampling and testing. Rather, he said, it represents an effort to outline, interpret and expand already available information regarding accepted procedures.

[1] See Avery, William M.: *Southern Materials Affiliate Produces New Lightweight Aggregate*, PIT AND QUARRY, January, 1949, page 129.

Operating Problems Several topics were brought up for discussion during an open forum on operating problems. In the report that follows the salient points will be covered without specific mention of individual or company names.

Cause and Prevention of Cement Balls: One producer mentioned having trouble with cement balls only when certain drivers were involved. Investigation determined that balls formed when mixer drums were turning very slowly at the time of batching. The trouble ended when drivers were instructed to speed up their drums. Others mentioned the following factors as having an important bearing on the problem: order of batching, insufficient water in mix, time of mixing, and the use of hot cement.

Hot Cement: One producer mentioned coping with the problem of hot cement by putting ice into the tanks from which mixing water is drawn. Another stated that his experience indicated that green (presumably hot) cement used during hot weather has a strong tendency to form balls right in the shipping container. In such cases, he said, the balled cement has been sacked at his plant and used only on jobs of secondary importance. He added that there seemed to be no loss of strength in the concrete made with this material.

Mr. Walker pointed out that occasionally hot cement is the result of excessively high grinding temperatures, causing dehydration of the gypsum content with resulting setting difficulties. Except for this possibility, he said, the problem of hot cement has been somewhat overemphasized.

Handling Mixing Water and Wash Water: On a show of hands among those present, it appeared that about half the producers re-use wash water and the other half dump it before batching. There seemed to be rather wide variations in the quantities of wash water used. Minimum figures mentioned included 8 gallons for 2-cu. yd. mixers and 10 gallons for 3-cu. yd.

Procedures for handling mixing water also vary considerably, if those who commented on the subject are representative of the entire industry. Some add all the water at the plant directly into the drum, and the driver has nothing to do with it. Others use calibrated tanks on the truck, and add water on the job until the desired slump is obtained. Still others add half the water at the batching plant and instruct the drivers to add the remainder on the job.

Dust Control: Only one producer commented on this subject. He reported installing a blower system connected through duct work to a skirt around the cement discharge spout. From two to four bags of cement are recovered every day by this method.

Batching Cylinder: C. "Dolly" Gray, retiring president of the association, described the use of a special batching cylinder which his company has developed. For two grades of coarse aggregate and one of sand, the cylinder graduations show weights for a wide range of strengths and slumps. A special adjustment (made by the plant engineer and locked so that the batch operator cannot change it) also takes account of variations in fineness modulus. There is also a mixing-water scale which can be set to compensate for moisture in the aggregates. Mr. Gray stated that this devise has saved sizable amounts of cement in the plants operated by his company, and in addition it has resulted in better control of slump, workability, and strength than had ever been achieved by other methods.

Markets in 1949 W. D. M. Allan, director of promotion, Portland Cement Association addressed the closing session of the convention on the subject of markets for ready-mixed concrete in 1949. Mr. Allan discussed the overall outlook for construction in 1949, and he stated that reports from the 26 district offices of P.C.A. tend to confirm the predictions of leading statistical organizations. The latter he summarized as follows: The Producers Council, $18.17 billion, up 1 percent over 1948; Engineering News Record, $18.1 billion, up 4 percent; joint estimates of U.S. Departments of Labor and Commerce, $18.75 billion, up 5.5 percent over 1948. He pointed out that even with these slight dollar increases, the physical volume of construction in 1949 is almost certain to be below 1948.

• George J. Frye (Dayton Builders Concrete Co.) and Claude L. Clark (secretary, Ohio Sand and Gravel Assn.)

• John L. G. Weysser and Ansel T. Rogers, both of Lehigh Materials Co.

In some areas of the country, Mr. Allan said, the volume of construction in 1949 may well drop to a level at which there will not be enough business to keep existing ready-mixed concrete plants operating at capacity. According to the speaker, producers who find themselves in this predicament should adopt "pin-point, rifle-shot" methods of market building, as opposed to "shotgun" methods of selling.

Everyone in the industry, he stated, has two selling jobs to do: immediate business selling and future market selling. It is extremely hazardous, Mr. Allan went on, for top management to devote its major attention to the jobs to be shipped within the next few days or weeks, waiting until the backlog of orders is gone to begin thinking about future market building. The ready-mixed concrete shipped six months or a year from now will be in most cases the result of careful market building today.

In Mr. Allan's judgment even a relatively small plant should assign some competent person to the major job of future market building. This individual should have the sympathetic ear and the full confidence of top management, and the importance of his work should be recognized throughout the organization.

Building adequate markets for the future, Mr. Allan said in closing, is a man-size job which challenges the best thinking and the most constructive action which the portland cement and ready-mixed concrete industries can put forth.

Cement Decision Thomas Austern, counsel to the Business Advisory Council of the U. S. Department of Commerce, presented a penetrating analysis of the far-reaching effects of the Supreme Court decision in the cement case. He called attention to the double stake which the ready-mixed concrete industry has in the basing point controversy, since it affects not only the industry's source of supply, but also its own practices with respect to zoned delivered prices.

As a result of the Supreme Court decision, the speaker said, five widely used types of selling now appear to be illegal. These he enumerated as uniform delivered price selling, zoned delivered prices, single-basing-point selling, multiple-basing-point selling, and f.o.b. mill selling with freight absorption to meet competition. He added that this seems to leave only straight f.o.b. mill selling with no freight absorption.

In the pending Johnson Bill, Mr. Austern said, price is redefined as the amount mentioned in the contract between seller and buyer. He expressed the hope that this and other provisions of the bill will, in the event it passes, go far toward dissipating the fog of confusion created by the Federal Trade Commission and the Supreme Court action.

Forum on Merchandising In his opening remarks as discussion leader for the forum on merchandising, Robert C. Collins of the Warner Company, remarked that the long seller's market enjoyed by the industry has caused many producers to become mere order takers. The prospect of a decline in some markets, he said, points up the urgent need for the immediate adoption of sound merchandising practices.

The ensuing discussion covered such varied aspects of merchandising as the effect of advance ordering on service available for customers who do not order in advance, quarterly cement prices, how to determine the selling price when cement must be purchased at widely varying prices, and what to do about rescheduling orders that are rained out. There seemed to be general agreement that the best method of handling the selling price problem was to base it on the average price paid for all cement.

In regard to the rained-out customer, one producer expressed the opinion that the policy adopted matters little if all customers are handled in the same way. Another stated that the problem can be handled if the producer will refuse to book advance orders for late afternoon delivery, thus leaving some free time every day for catching up arrearages caused by bad weather. Another suggestion was that no guarantee be given to customers who insist on breaking into the middle of the day.

H. F. G. Pelsue, Metropolitan Sand & Gravel Co., drew an appreciative chuckle at this point with the dry observation that he didn't think a rainy morning that interrupts delivery schedules in 1949 was nearly as serious as possible sunny mornings in 1953 when there might be no orders to deliver. He urged the association to give serious thought to the development of wider markets for the future.

Cement Supply Commenting on the supply outlook for cement in 1949, Vincent P. Ahearn, executive secretary of the association, stated that the picture for the country as a whole is better than it has been in several years, but that spot shortages will probably recur during the year. This conclusion was based on information sent to Mr. Ahearn by 45 cement producers representing all sections of the country. New plants and the modernization and rehabilitation of existing plants are expected to increase 1949 productive capacity to approximately 210,000,000 bbls., an increase of almost 5,000,000 bbls. over 1948. This would be a new all-time peak.

Mr. Ahearn pointed out, however, that the indicated increase in production would not by any means be apparent in all sections of the country. In view of this, he suggested that producers of ready-mixed concrete initiate discussions with their cement suppliers and seek commitments for definite quantities distributed by months. Producers who adopted this practice in 1948, Mr. Ahearn added, found it of considerable benefit to all parties concerned.

Blocks F.O.B. Turbotville

(*From page* 131)

One aluminum door of double thickness, filled with spun fiber glass, closes the kilns during the curing cycle. A 125-hp. stoker-fired boiler provides the steam used for curing, as well as for the aggregate bins, which are heated during the winter months. The green blocks are left in the kilns for 8 hours, 4 hours of combined heat and steam at 120 deg. F., and 4 hours of soaking.

Four LT-60 Towmotor five-prong lift trucks move the freshly-cured units from the kiln to the yard, where the blocks are cubed by hand—90 cinder blocks to a cube or 75 heavyweights. State road weight restrictions impose a limitation upon the number of units per cube in addition to the desirability of a standard optimum size for materials-handling purposes.

When the demand for concrete blocks slows down and turns from a seller's to a buyer's market, the Turbotville Block Co., Inc., will be well prepared to maintain a high production schedule balanced on a consistent and proven sales effort. Besides an organized advertising campaign which appears regularly in local papers, the company maintains one salesman who devotes his full time to contacting old and new customers. In addition, Mr. Stamm pitches in on the sales and promotional plans for his company, sometimes piloting his own Navion plane several thousand miles to line up a new plan or contact a customer.

The company employs 56 persons. Mr. Stamm is president and treasurer of the Turbotville Block Co., Inc. and Mrs. Stamm is secretary.

Big Production Year Reported For Clay Products in 1948

The American structural clay products industry, engaged in a spirited race with the growing concrete products industry, reported that it had enjoyed its greatest production year in 1948 since 1930. More than 7,000,000,000 brick equivalents were turned out by the nation's brick and tile producers in the 12-month period.

Output of brick alone was 16 percent greater than in 1947, with a total of 5,845,000,000 units, while the volume of hollow facing tile, glazed and unglazed, reached 335,000,000. Other structural clay tile production continued to parallel 1947 levels, attaining an output of 1,261,000 tons of tile.

Reardon Takes to Mike In Campaign for Turnpike

William J. Reardon, president of Reardon Industries, Inc., Cincinnati, makers of concrete colors and chemicals, spoke over Radio Station WLW, Cincinnati, on February 28, 1949, on behalf of the Ohio Turnpike Bill, now in the Ohio Legislature.

The Ohio Turnpike Bill gives permissive powers such as were necessary for the building of the Pennsylvania Turnpike, and which is now in operation. The Ohio Turnpike Bill is known as Senate Bill No. 7, and has been reported out of the Senate Committee with recommendation for passage.

Mr. Reardon is a member of the Board of Trustees of the Ohio Turnpike Committee which drew up the bill.

Monterey Area Gets Ready-Mix From New Batching Plant

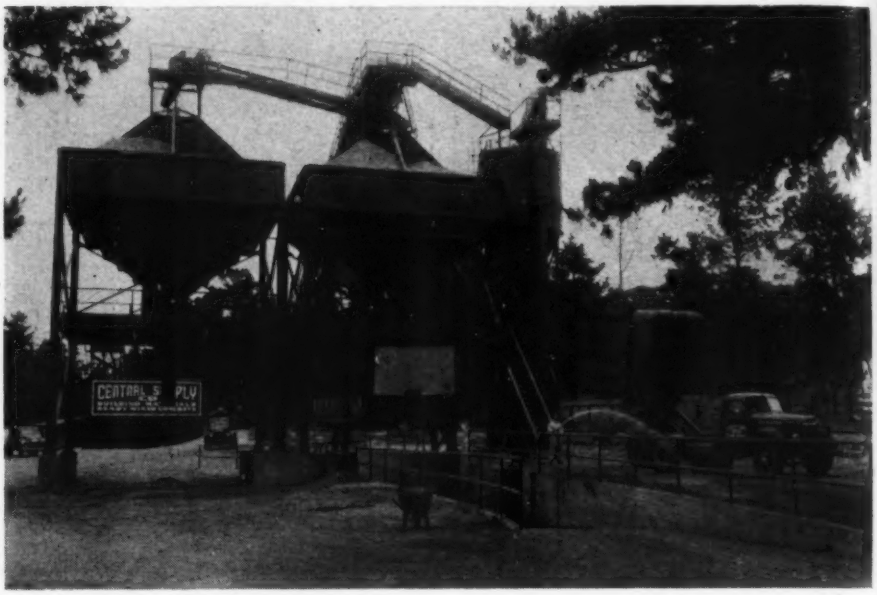
By HARRY F. UTLEY

another ON THE SPOT report

EARLY in 1948 the Central Supply Co. started operations at a new dual plant in Asilomar, Calif., providing the fabulous Monterey Peninsula for the first time with a truly modern ready-mixed-concrete service. The company had been supplying some concrete previously, however, utilizing a 20-year-old set of aggregate-storage bunkers at Asilomar, but the new all-steel facilities have the speed, accuracy, control and overload capacity to service the largest job with almost any conceivable mix design.

Served by a branch of the Southern Pacific R. R., aggregates arrive by rail from the parent Granite Rock Co. plant near Watsonville. Some fine sand is obtained from the Prattco plant of Pacific Coast Aggregates. Because it is in greatest demand, a ¾-to ¼-in. mix is proportioned and pre-blended at the Granite Rock plant before being loaded into the cars.

The material is dumped into a 30-ton track hopper with the aid of a Link-Belt motorized car-spotter; and a short feed belt transfers it from the hopper to a 24-in. by 300-ft. Goodrich conveyor belt running up to the twin Noble CA354 plants. One of these units is being used for pre-mixed concrete, while the other is at present used only to weigh out aggregates for sale. Each 4-compartment overhead bin has a capacity of 350 tons. A 24-in. by 30-ft. cross belt running between the two bins enables either to take the load coming up on the conveyor, distribution being accomplished by turn-heads cable-controlled from the ground. A carload of aggregates can be unloaded and distributed into the bin compartments in a matter of 15 minutes.



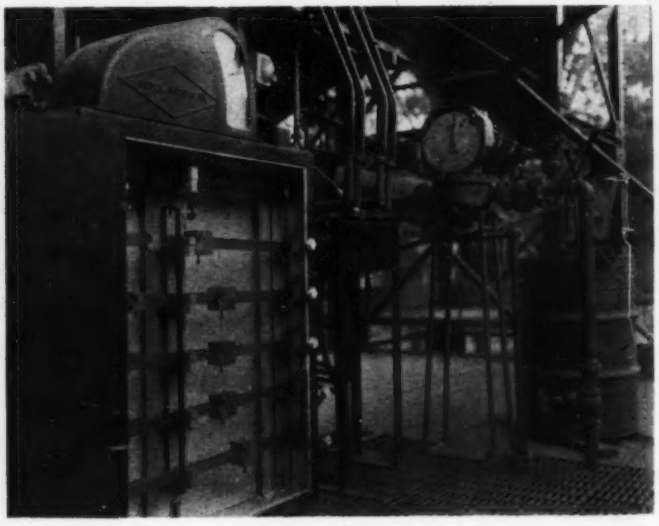
• A view of the Central Supply Company's plant at Asilomar, Calif., showing the dual batch plant installation. At the right a dump-truck is being washed.

A Noble 300-bbl. silo stores bulk cement which may be received by rail or truck. Both plant units are equipped with 2-cu. yd. Noble weigh-hoppers and 5-beam scales. The concrete-plant batches are dumped to a C.M.C. revolving mixer, most of the concrete produced being delivered by Dumpcrete units. Air is entrained in the mix by the addition of Darex at the mixer, the pump on the dispenser being set to deliver just the right amount of the admixture with a single stroke of the handle.

Two Dumpcrete units are in regular service at Asilomar, but the Central Supply Co. owns a total of eight, the others in use at its Santa Cruz, Watsonville, and Salinas operations. Any or all of these units may be quickly dispatched to any of the four concrete plants as the demand requires, since the greatest distance by highway between any two plants is

(*Continued on page* 144)

• Looking toward the batch plant from the under-track hopper. A motorized car spotter may be seen at the right.



• A part of the batching floor, showing the beam box, with door open, control levers (right of box), the water meter and the dispenser for an air-entraining admixture.

Practical Topics Discussed At A.C.I. Convention in New York

another ON THE SPOT report

THE annual convention of the American Concrete Institute held at the Statler Hotel in New York City on February 23, 24 and 25 developed a very practical atmosphere. Research and design topics were discussed, but principal emphasis was directed toward practical problems of concrete construction. Almost a complete half-day session was devoted to each of the following: air entrainment, ready-mixed concrete, and architectural concrete buildings. The attendance, over 500 registrants, was not a record, but interest as shown by the spirited discussion of papers, was exceptionally high.

A new feature at an A.C.I. meeting, following the very successful innovation at the Denver convention a year ago, was an entertainment program for the ladies, arranged by the New York committee, of which M. J. McMillan was chairman. The high point was a bus trip to Lake Success and a conducted tour of the United Nations quarters, during which the "workings" of that body were covered in detail.

Durability The opening technical session of the convention was devoted to *Problems in Concrete Pavement Surface Durability,* for which Frank H. Jackson, U. S. Public Roads Administration, Washington, D. C., served as chairman. In the first paper, B. D. Tallamy, superintendent of the New York State Dept. of Public Works, outlined the work of his organization to control scaling of concrete pavements resulting from the use of chloride salts. He pointed out that as transportation arteries must be kept open at all times, in spite of the natural elements, his department started experimenting in 1936 with mixtures of chlorides and sand and with straight chlorides, to free the pavement surface of ice. As the deicing was found to cause scaling, especially on new slabs, a remedy was sought. The damage was less on upgrade lanes than on downgrade; therefore it was concluded that oil drippings on the surface tended to prevent scaling. A program of spraying pavements with distillate oil at a cost of about 1 cent per sq. yd. was initiated, which has shown good results.

Air Entrainment Lee Adams and Herbert Woods, both of the Portland Cement Association, pointed out that Laboratory tests had shown that oil coatings are not as good protection against surface scaling as entrained air in the concrete. It was mentioned that New York State had specified air-entraining concrete on a project for the first time this past summer, whereas several neighboring states have used air entrainment in pavements for several years, with good results as regards uniformity and strength of concrete, and durability of the surface under de-icing conditions. A. G. Timms, Public Roads Administration, stated tests had shown that with ¾-in. aggregate, an air content of at least 7 percent is needed to insure against scaling.

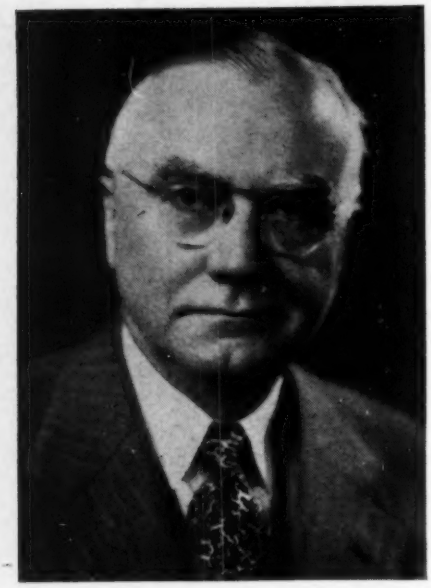
In a paper outlining the *Experience with Air-Entraining Concrete in New Jersey,* Chas. M. Noble, state highway engineer, commented that the greatest damage to New Jersey pavements had resulted from heavy loadings under state regulations, which permit 40,000 lbs. on one axle and 98,000 lbs. gross weight, with modern truck tires. Scaling was not a problem during the early 40's, due to the high quality of concrete obtained under the state specifications and inspection. But as the public demand grew for the use of chemicals for de-icing, the department began using air entrainment in 1945. Since 1946 it has specified Type II cement and air entrainment, obtained either by intergrinding or by an admix at the mixer, in all concrete except when not in contact with chemicals. Mr. Noble stated that both contractors and the state have liked air entrainment, but cautioned that it should not be considered a cure-all and that the same care in securing good materials and workmanship is necessary as with ordinary concrete.

During the discussion, I. E. Tyler,

• Harry E. Thomson, consulting engineer, St. Louis, Mo., prominent in the American Concrete Institute and the National Ready Mixed Concrete Assn., was elected A.C.I. vice-president.

• Robert F. Blanks, chief of engineering and geological control for the Bureau of Reclamation, Denver, Colo., retiring president of the American Concrete Institute.

Portland Cement Assn., remarked that various comparative tests had not shown less scaling with Type



• Stanton Walker, director of engineering, National Ready Mixed Concrete Association, Washington, D.C., presented one of the most important papers on the program.

II cement than with Type I, but that the results so far have not been conclusive. C. A. Cash, Michigan Highway Department, stated that his state now has over 500 mi. of air-entraining concrete pavement and that experience with it has been satisfactory. The department has noted a greater tendency toward cracking in forenoon than in afternoon forms, which might point toward a need for insulation of fresh concrete or protection by awnings. Professor E. E. Bauer, University of Illinois, stated that the Illinois Highway Department had first used air entrainment in a section of Archer Avenue, in Chicago in 1941, and had extended its use to the point of specifying air in all slabs contracted in 1948. The record for pavement with air entrainment has been generally good.

Under the title *What We Have Learned About Air-Entraining Concrete,* J. F. Barbee, engineer with the Ohio Department of Highways, reviewed the effects of air entrainment on the various properties of concrete, including plasticity, workability, strength, abrasion resistance, bleeding and finishing. He emphasized that better results can be obtained when the amount of air entrained is kept at the optimum for the work in hand; for highway work 4 percent air has been advanced as the optimum, but further study is necessary to determine what is the optimum for various purposes. He pointed out that the entrained air decreases as the temperature increases, and that this variation is more marked as the slump increases.

Robert F. Blanks, retiring president of the institute, and chief of engineering and geological control for the Bureau of Reclamation, presented a paper by W. A. Cordon, also of the bureau, and himself on *Practices, Experiences and Tests with Air-Entraining Agents in Making Durable Concrete.* In discussing the improvement in durability which has been widely observed, Mr. Blanks stated, "Various theories have been advanced to explain the improvement in concrete durability due to air entrainment. The most plausible and probably the most generally accepted explanation, is that the minute disconnected air bubbles act as a sponge or buffer to provide spaces where the forces which cause disintegration can be dissipated." At another point he stated that laboratory tests indicated strength of 2-sack-per-yd. concrete, such as might be used in future massive structures, was higher when containing entrained air than when without air. After reviewing the types of air-entraining agents and suggesting a series of tests for evaluating the materials he stated, "The use of air-entraining cements is not recommended when facilities are available for accurate control of air entrainment at the mixer." Subsequent discussion of this last point indicated a trend, for other than highway construction, toward the practice of obtaining air-entrainment when required, by using regular cement and adding a suitable admix at the mixer instead of using a "plasticized" cement with the agent interground.

Structural Design At the structural design session of the convention, for which Professor H. J. Gilkey, Iowa State College, was chairman, a paper on *Rational Analysis and Design of Two-Way Concrete Slabs* was presented by Dr. C. P. Siess, University of Illinois. The paper summarized the recent graduate thesis of Dr. Siess which was developed under the direction of Prof. W. N. Newmark. A new procedure for computing the distribution of moments in a number of rectangular, two-way building floor slabs was described. Among the variables studied were the ratio of sides, the effect of discontinuous edges, and the torsional stiffness of the beams. Some of the results of this analysis indicated a difference in approach from the design procedure for two-way slabs now specified in the A.C.I. Building Code.

Concrete Footings A recent experimental investigation of reinforced concrete footings for walls and columns was reported by Professor Frank E. Reichert, also of the University of Illinois. He pointed out that little study had been directed to footing design since 1913. The present investigation, conducted in cooperation with a committee of the American Iron and Steel Institute, was begun in 1944 and completed recently. Attention was given to the resistance of footings to failure by bond, diagonal tension, and tension in the steel. Tests were also made of footings with

• Hubert Woods, formerly research director, Riverside Cement Company, Los Angeles, Calif., recently named director of research of the Portland Cement Association.

caps beneath the columns. Among the important developments from the tests were the following: proof that the bending moment and shear in footings depend on the full applied load; indication that straight deformed bars of the new types had as great bond resistance as hooked bars, and evidence that caps increase the load capacity of footings. In closing, Professor Reichert remarked, "With further study of the original data in this investigation, it seems likely that worthwhile improvements in present design procedures for footings will be forthcoming in due time."

The interest paid to this paper indicated the audience considered that the results of this investigation were of great significance in the design of reinforced concrete foundations. Professor C. J. Posey, University of Iowa, pointed out that in spite of the showing of the tests, hooks are needed to meet certain conditions, and stated that some of

his tests had shown better bond with large hooks than with small. J. R. Nichols, Boston, pointed out that as earth pressure is inclined toward the center of a footing, the support of the central area is greater than the uniform support of springs as used in the tests.

Experimental Methods A paper on *Experimental Aids in Structural Concrete Design* was presented by Dr. R. E. Glover, Bureau of Reclamation. O. J. Olsen and Carl Zangar, both of the same Bureau, were co-authors. The paper pointed out that experimental methods applied to models are frequently of aid in the design of statistically indeterminate structures. Photo-elastic methods using both the polariscope and the interferometer were described. The use of a "deformeter" by which deformations of a small scale elastic model are observed by microscopes, was also described. Another type of aid in such stress analyses is a brittle lacquer; when painted on the surface of a model under test, the cracks indicate the pattern of stress and permit a reasonably accurate estimate of the stress magnitude. In answer to a question from the floor as to how the results of photo-elastic tests on models compare with actual structures, Dr. Glover stated that sometimes the check was not too good but that the discrepancies were largely a matter of interpretation of the observations.

A. C. I. Awards Following a well-attended get-together luncheon, the annual A.C.I. awards were presented by President Robert F. Blanks as follows:

Frank H. Jackson and Harold Allen received the Wason medal for the "most meritorious paper"—*Concrete Pavements on the German Autobahn.*

R. C. Mielenz, K. T. Greene, and E. J. Benton received the Wason award for "noteworthy research" for their work reported in their paper *Chemical Test for Reactivity of Aggregates with Cement Alkalies.*

R. E. Davis, E. C. Jansen, and W. T. Neilands received the A.C.I. Construction Practice Award for the work reported in their paper *Restoration of Barker Dam.*

New Officers At the afternoon session Professor F. N. Menefee reported the teller's certification of the election of new officers and directors as follows: president—one-year term, Herbert J. Gilkey, Ames, Ia.; vice-president—two-year term, Harry F. Thomson, St. Louis, Mo.; directors—three-year term, Harmer E. Davis, Berkeley, Calif.; H. C. Delzell, Chicago, Ill.; Nathan M. Newmark, Urbana, Ill., and R. W. Spencer, San Marino, Calif.

Professor Menefee also announced that the board of directors had named Paul W. Norton, Boston, Mass., to fill a vacancy as director for a one-year term. Professor Gilkey heads the department of theoretical and applied mechanics at Iowa State College, Ames, Ia.

Prescription Cement In his address as retiring president, Mr. Blanks undertook to look into the crystal ball to predict some of the characteristics of cement and concrete 50 years hence. He anticipated a change in the definition of aggregates wherein they would no longer be described as "inactive." He suggested the extinction of cement chemists and could see our present portland cement as fading from the picture; instead, the manufacturers would be served by prescriptionists, who would specify the necessary wetting, dispersing, and puzzolanic materials; and the good qualities of the present 20 types of cement would be furnished in a single package. He suggested that aggregates might be evaluated in terms of "concrete making qualities" instead of their own characteristics as at present. He visualized the future world as an engineers' world, in which design engineers would use to advantage the help of other specialists. In view of his advantageous position in research work, such predictions from Mr. Blanks assume special significance.

Ready-Mixed Concrete A paper on *Controlling the Uniformity of Ready-Mixed Concrete* was presented by Stanton Walker, National Ready Mixed Concrete Association, Washington, D. C. The rapid development of ready-mixed concrete since its appearance commercially in about 1920 was traced. The possibilities for more accurate measurements and better control of materials at a centralized commercial plant, as compared to job-mixing on ordinary construction jobs was indicated, and the necessity for careful and intelligent control of mixing water was emphasized. Attention was directed to the mutuality of responsibility of the ready-mix producers and their customers in accomplishing effective control.

There followed one of the liveliest discussion periods in the long history of the A.C.I. Alexander Foster Jr. of the Warner Company, Philadelphia, outlined a series of special tests conducted by that company, in addition to routine tests, all intended to insure the quality and uniformity of ready-mixed concrete delivered to their trade. He pointed out that the best facilities do not insure uniformity unless there is a will to do so on the part of the personnel, from management down. A representative of a large contractor reported on a recent canvass among the superintendents on 18 jobs as to their experience with ready-mix; only four had reported deliveries as other than good. He added that the company's experience had in general been satisfactory with the larger producers who were well equipped with trucks, and that any questionable experiences had been with smaller, poorly-equipped concerns. This company makes an analysis for jobs of over 2000 cu. yds. as to overall costs for ready-mix vs. job-mixed concrete in place.

The manager of the Building Contractors Association of New Jersey reported on a recent poll among their more than 400 members as to experiences with ready-mix; the replies emphasized the importance of delivery service; the most serious criticism was that in one area a contractor on a large project had not been able to obtain more than 80 cu. yd. per day. W. S. Elliott, formerly chief of the materials section of the New York City Department of Public Works stated that inadequate mixing was at times the cause of poor concrete, and that he had found it desirable with truck-mixing to run mixing water into the drum early, instead of waiting for arrival at the job, to insure good mixing. Mr. Harris of the Metropolitan Sand and Gravel Corp., New York, pointed out that an established producer operates with experienced personnel; his firm has found it desirable to control all water at the charging plant. Their trucks do not carry wash water; they believe that an operator should adopt firm policies, which must be adhered to. Mr. Walker closed the discussion with a review of a number of manuals which his office has distributed to the industry, outlining steps for obtaining proper control of ready-mix concrete: He also spoke of a recent publication of the association in which *Recommended Practices for Sampling and Testing Ready Mixed Concrete* are outlined.

Research At the session devoted to research, in charge of Professor S. J. Chamberlain, Iowa State College, and Professor G.

(*Continued on page* 144)

Wealth of Know-How Backs Up New Line of Concrete Block Equipment

THE concrete masonry unit industry of today is a vastly improved one as compared to that of 1903. Much of the progress is attributable to the constantly improved equipment for manufacturing the units. As is true of all relatively new industries, the future depends in a large measure on still further improvements being made. Nothing stimulates progress and improvements more than good healthy competition.

Because this rivalry so directly benefits the concrete masonry unit industry, the appearance of a new major contender in the field is always of interest. When the formation of The Gene Olsen Corporation was announced in these pages last July, this interest was considerably heightened by the fact that the organizers of the new company, and most of its personnel, brought to the undertaking a rich background of experience in the block machinery field. Eugene F. Olsen, president of the company, has been closely identified with the concrete masonry unit machinery industry since 1919, and his associates in the enterprise are all veterans with many years of experience in the development, production, and marketing of concrete products equipment.

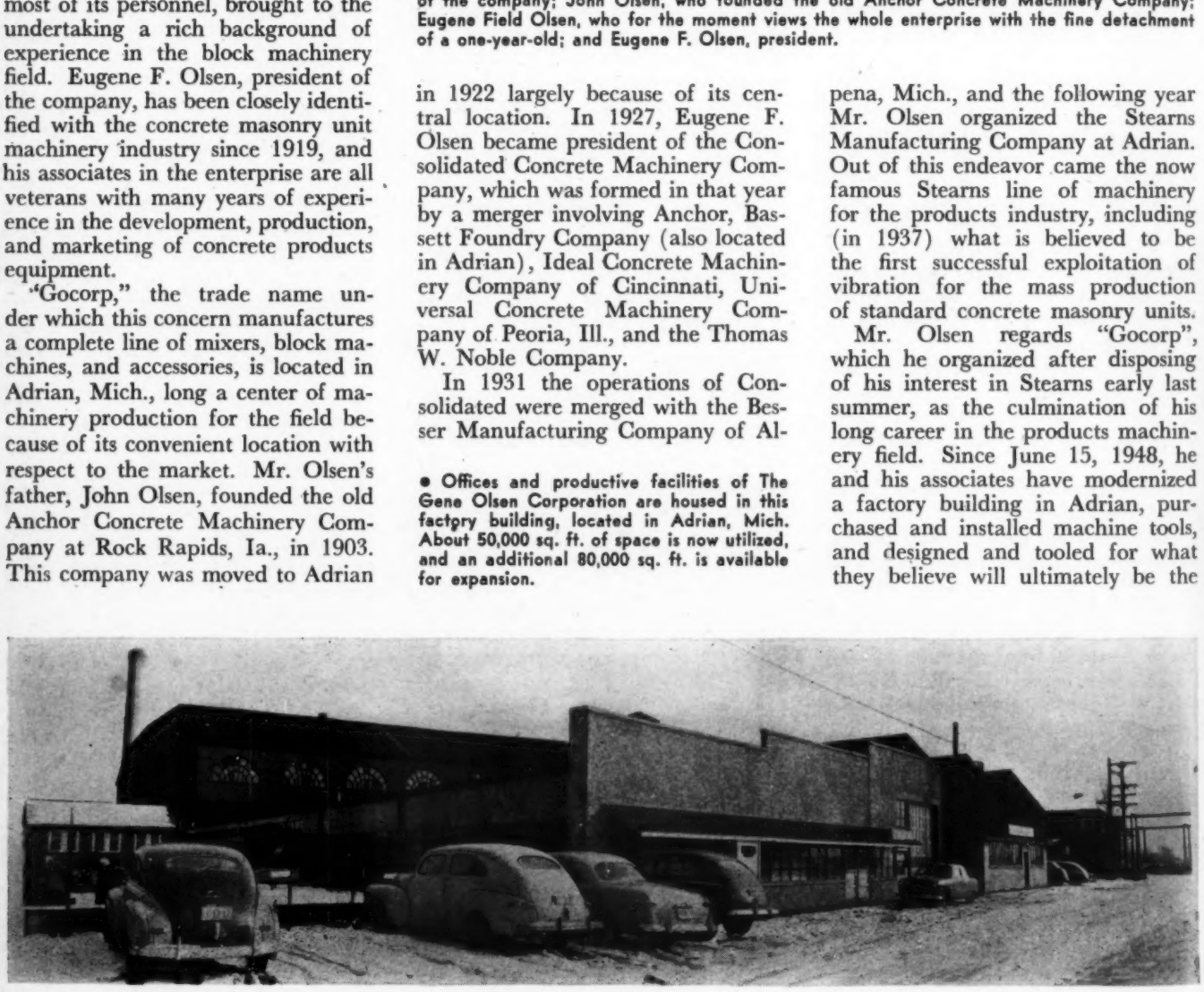
"Gocorp," the trade name under which this concern manufactures a complete line of mixers, block machines, and accessories, is located in Adrian, Mich., long a center of machinery production for the field because of its convenient location with respect to the market. Mr. Olsen's father, John Olsen, founded the old Anchor Concrete Machinery Company at Rock Rapids, Ia., in 1903. This company was moved to Adrian in 1922 largely because of its central location. In 1927, Eugene F. Olsen became president of the Consolidated Concrete Machinery Company, which was formed in that year by a merger involving Anchor, Bassett Foundry Company (also located in Adrian), Ideal Concrete Machinery Company of Cincinnati, Universal Concrete Machinery Company of Peoria, Ill., and the Thomas W. Noble Company.

In 1931 the operations of Consolidated were merged with the Besser Manufacturing Company of Alpena, Mich., and the following year Mr. Olsen organized the Stearns Manufacturing Company at Adrian. Out of this endeavor came the now famous Stearns line of machinery for the products industry, including (in 1937) what is believed to be the first successful exploitation of vibration for the mass production of standard concrete masonry units.

Mr. Olsen regards "Gocorp", which he organized after disposing of his interest in Stearns early last summer, as the culmination of his long career in the products machinery field. Since June 15, 1948, he and his associates have modernized a factory building in Adrian, purchased and installed machine tools, and designed and tooled for what they believe will ultimately be the

• Although not all are active in the affairs of "Gocorp" at present, there are four generations of the Olsen family involved. Left to right: Gene D. Olsen, vice-president and secretary of the company; John Olsen, who founded the old Anchor Concrete Machinery Company; Eugene Field Olsen, who for the moment views the whole enterprise with the fine detachment of a one-year-old; and Eugene F. Olsen, president.

• Offices and productive facilities of The Gene Olsen Corporation are housed in this factory building, located in Adrian, Mich. About 50,000 sq. ft. of space is now utilized, and an additional 80,000 sq. ft. is available for expansion.



• This view shows some of the machine-shop facilities in the "Gocorp" factory.

most complete line of products machinery ever produced by a single company. In this same period an effective sales and distribution organization has also been built up.

Obviously the new company's most important assets are the experience and know-how of its personnel. By starting with a clean slate, "Gocorp's" only tie with the past is the knowledge and experience of its men. There are no inventories to be made obsolete by new designs, no accounts receivable, recent customers, considerations of good will, or any of the other diverse factors which ordinarily make it impossible for a veteran organization to start from scratch.

This freedom from the past is clearly evident in the designs which "Gocorp" has developed to date, and it will be an increasingly important factor as the company swings into full production. The "Gocorp King" block machine, which attracted much attention at the recent Concrete Industries Exposition in Cleveland, is a wholly new design. Its production is said to exceed twenty-four 8-in. equivalents per minute—probably a new high for the industry. It utilizes O'Connor resonant vibration, and incorporates the "M & M Electro-Visor", which automatically controls time of vibration to produce units of controlled height and density. Double mold boxes permit the production of two sizes of block simultaneously. Compaction is accomplished by a combination of mold box vibration and head pressure. The standard plain pallets used are returned automatically from the front of the machine to the rear.

The "Gocorp Senior" is constructed along lines similar to the "King" and most of the parts are interchangeable. Its rated capacity is approximately half that of the "King". The line also includes a low-priced plain pallet vibration machine known as the "Junior", which is said to make block of the same quality as the larger machines.

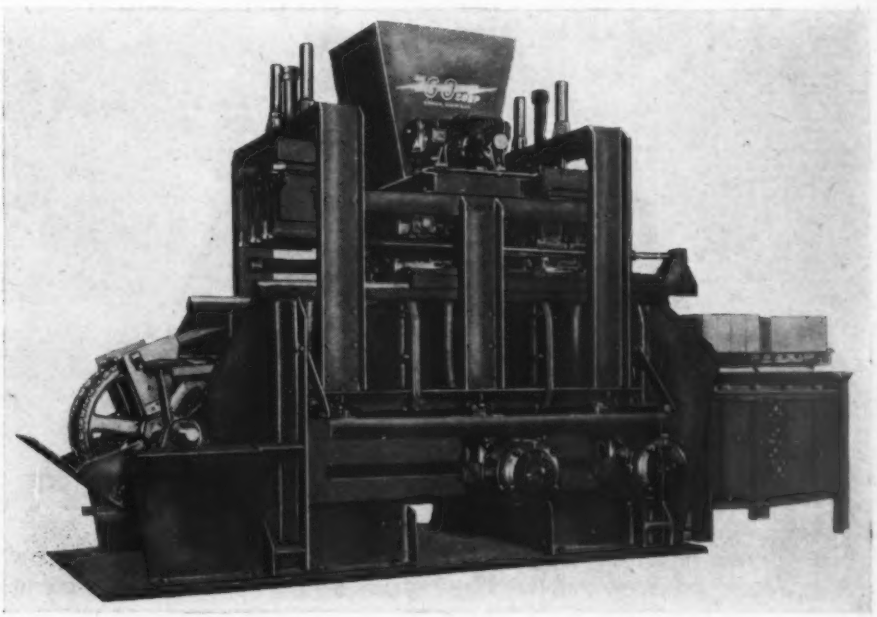
Shortly after its formation, "Gocorp" became exclusive distributor for the concrete products division of The Yoder Company and is collaborating with that company in connection with a continuous mixer which proportions by means of a densifier, testing machines designed specifically for block plants, and the development of equipment for manufacturing lightweight aggregate.

"Gocorp" also is the distributor of the recently announced "M & M Electro-Visor", which is an automatic quality control device applicable to most high-production block machines, including those already in the field.

Other items in the "Gocorp" line at present include a packerhead drain tile machine for making tile up to 14 in. in diameter, batch mixers, offbearing and yarding hoists, skip loaders, elevators for use with continuous mixers, and a unique automatic feeder for cored pallets.

For an organization which is still less than a year old, the development of so complete and versatile a line of equipment is a remarkable achievement in itself. Perhaps one of the best critera of the line in respect to quality is the impressive list of distributors who will handle it, including such well-known names as Thomas W. Noble, "Del" DeLamater, Ted Merriam, Frank R. Oakes, "Alf" Olsen, Concrete Block Plant Equipment Co., and Metropolitan Equipment Co.

Associated with Mr. Olsen in his new undertaking are his son, Gene D. Olsen, vice-president and secretary of the company, who is in charge of sales, and Robert O. Davis, vice-president and treasurer, who has charge of engineering and production. "Gocorp" is fortunate indeed to be able to draw on the talents of men who have already contributed so much to the technology of mass production in the concrete masonry unit industry.



• The "Gocorp King" block machine, production of which is said to exceed twenty-four 8-in. equivalents per minute. It compacts by a combination of mold box vibration and head pressure.

Central Supply Company

(*From page* 138)

but 49 miles. The Dumpcrete trucks are used also at Asilomar to deliver straight or dry-batched aggregates weighed out from the second Noble plant. Each has a carrying capacity of 4 cu. yds. of premixed concrete, or 7 cu. yds. (heaped) of aggregates.

Deliveries from Asilomar are largely confined to a 15-mile radius of the plant and take in the nearby resort communities of Monterey, Pacific Grove, Seaside, Del Mar, Pebble Beach and Carmel-by-the-Sea.

The old bunker facilities are being utilized for mixing and aging lime-putty, which is delivered in steel drums to the plastering trade. An almost complete line of building materials and supplies is also carried.

Headquarters of the Central Supply Co. and the Granite Rock Co. are in Watsonville. William Taylor is general manager of the Central Supply Co. Nick Hansen is superintendent of the Asilomar plant.

Practical Problems Discussed

(*From page* 141)

W. Washa, University of Wisconsin, respectively chairman and secretary of the Research Committee, there was distributed a listing of research projects in plain and reinforced concrete now being conducted. The list covered the personnel and titles of projects at 22 educational institutions and 29 private, state, or government institutions. A series of short reports on nine selected projects was presented. The variety of current research was indicated by some of the topics, which included the following: influence of aggregates on durability of mass concrete, bond tests with air entraining concrete, protective and decorative coatings, bond stress in embedded reinforcement, prestressed spirally reinforced concrete columns, and stress-strain curve of concrete loaded beyond the ultimate strength.

Architectural Concrete The final session of the convention was devoted largely to a discussion of architectural concrete. John J. Hogan, Portland Cement Association, spoke on *Design Details for Architectural Concrete.* He pointed out that after architectural concrete is decided on for a structure, the architect must decide on such matters as surface texture, type of lumber for forms, nature of

(*Continued on page* 145)

ornamentation, types of moldings and use of waste molds. The development of details will follow requirements of such fundamental factors.

A companion paper on *Construction Practices for Architectural Concrete* was presented by E. B. Oberly, also with the Portland Cement Assn. He emphasized the importance of the construction of forms, which must be strong enough to retain alignment and rigidity during pouring. Whalers and tie rods require special attention. Details must be worked out to avoid rust streaks and bad joints. He recommended that plywood forms be aligned in the horizontal direction, rather than the vertical. The concrete should be plastic, uniform in quality, not too wet, and mixed with sand which is not too coarse; it should be carefully placed, to avoid over-vibration.

Lightweight Aggregates The work of the National Bureau of Standards in classifying lightweight aggregates and studying the characteristics of concrete made with them was discussed in a paper on *Lightweight Aggregate Concrete* by R. W. Kluge, M. M. Sparks, and E. C. Tuma. Professor Kluge was formerly with the bureau but is now at Purdue University; Messrs. Sparks and Tuma are engineers with the bureau. The bureau's study has been significant in furnishing basic information for the use of lightweight concrete where insulating properties are important and for structural purposes where the reduction in weight contributes to over-all economies in cost.

Concrete Masonry The closing paper on the program was by Jay C. Ehle, Cleveland Builders Supply Co., Cleveland, on *Developments in the Manufacture and Technology of Concrete Masonry Units*. The paper discussed some of the problems in this field, and some of the improvements in production which are leading to better products at continuing low cost.

NEW MACHINERY and SUPPLIES

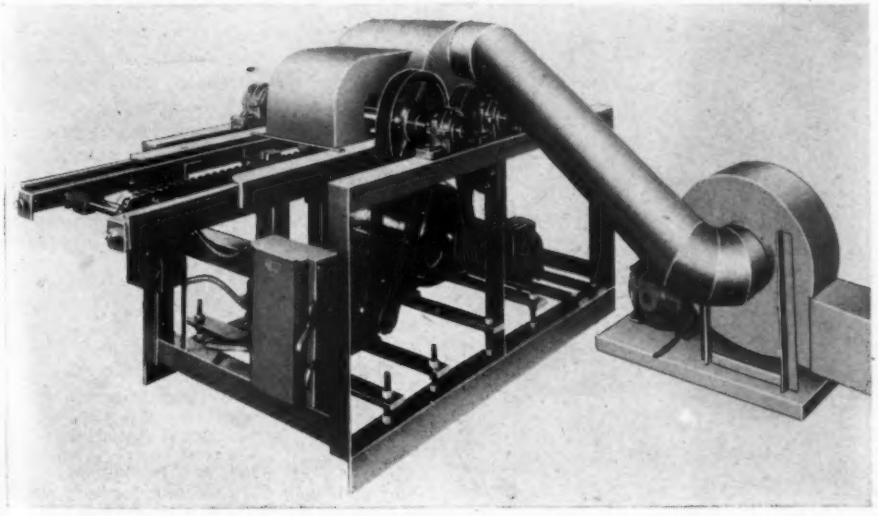
● Pallet Cleaner

A piece of equipment designed to solve a troublesome problem for the concrete block manufacturer is the Bergen pallet cleaning machine developed by the Bergen Machine & Tool Co., Inc., Nutley, N. J.

Racks full of pallets are brought to this machine directly after the units have been removed. One at a time the pallets are put on the conveyor chain, to come off the other side cleaned and ready for the next operation. Each machine is furnished with a dust removal system.

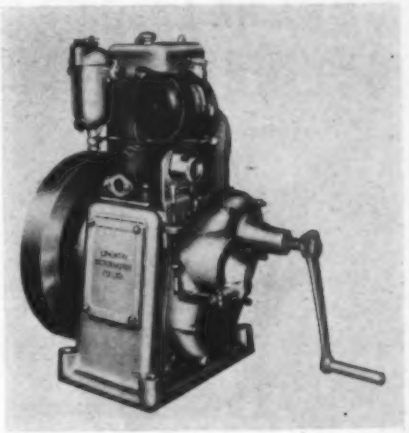
Cleaning stars mounted on shafts revolving on ball-bearing pillow blocks strike the pallet with sufficient force to remove concrete adhesions. These star cutters and the shafts are replaceable. The entire machine can be moved by a fork lift-truck. At normal operating speed, the machine reportedly will clean a 12- by 18-in. pallet in six seconds.

The framework is of welded, extra-heavy angle iron. Two motors—5-hp. and 10-hp.—are supplied to operate the cleaner.



● Light Diesels

The Coventry Victor Motor Company, Ltd., Coventry, England, through its sole distributor, E.I.E. (New York), Inc., 111 Broadway, New York, N. Y., is offering to the American trade two models—W.D.1 and W.D.2—of small diesel engines. These are similar in construction, except for the bore, flywheel and size of exhaust valve. Model W.D.1 is rated 5 to 7 hp. at 1500 to 2250 r.p.m., with recommended maximum continuous rated speed of 1800 r.p.m. producing 6.54 hp. Model W.D.2 is rated 7 to 9 hp. at 1500 to



2500 r.p.m. with the same recommended speed of 1800 r.p.m. developing 8 hp.

These engines are of the single-cylinder, vertical, 4-cycle, water-cooled type. The crankcase is an aluminum alloy casting and provides a mounting for the crankshaft, camshaft, and injection and oil pumps. The forged steel crankshaft is heat treated and incorporates integral counterweights to insure balance.

The units are so small that hand starting is entirely practicable. A Weaver Patent Cold Starting Device is incorporated for further assistance in easy starting. Both models are currently being used for powering small pumping sets, generator sets, small contractors' machinery such as concrete mixers, and for direct power take-off.

● Small Tank Carrier

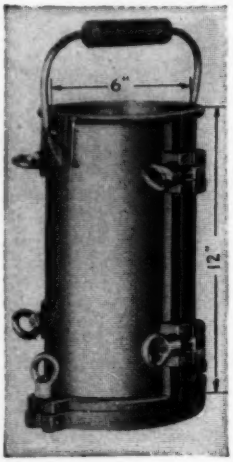
Market Forge Co., Everett 49, Mass., has introduced a new form of equipment utilizing its standard Load Carrier truck with a 275-gallon aluminum tank mount-

ed in a cradle. Such an unusual truck has many uses in a great many industries.

Aluminum tanks are used where liquid contents do not affect aluminum or are not affected by aluminum. A steel tank can be substituted for aluminum.

The Standard Load Carrier truck is 30 in. wide by 63⅜ in. long; it is equipped with two 12- by 2½-in. wheels and two 6x2 swivel casters cushioned in rubber.

MOLINE
CONCRETE TEST
CYLINDER MOLD



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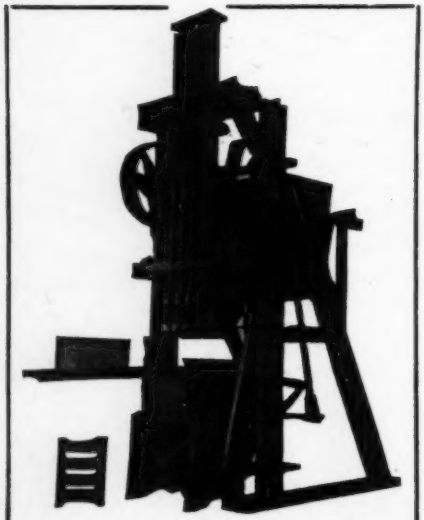


An All-Purpose Machine

The Junior Stripper will turn out more blocks per man than any other hand-operated machine on the market . . . 200 per hour being easily maintained! Nor has quality of output been sacrificed for the sake of speed. Units are uniformly dense, true to shape, of uniform texture.

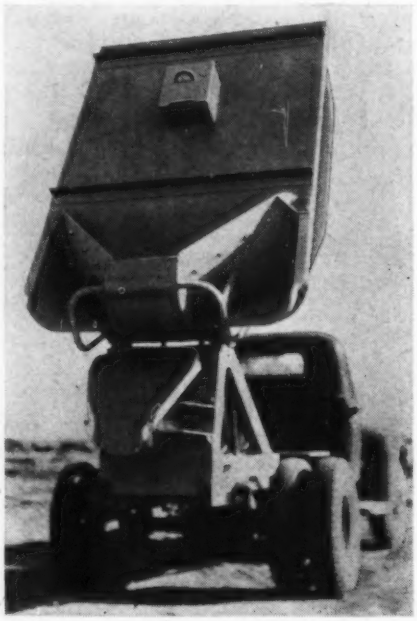
Stearns Clipper Stripper Machines; Stearns Joltcrete Machines; Stearns Mixers; Cast iron and press steel pallets. Straublox oscillating attachments, etc. Repair parts for: Anchor, Stearns, Blystone Mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager **Columbus, Ohio**

● 4-Cubic Yard Dump Truck

The Dumpcrete Division of Maxon Construction Co., Inc., 131 N. Ludlow Street, Dayton, 2, O., offers its 4-cu. yd. Dumpcrete, used for hauling concrete, bulk cement, aggregate, and similar materials.

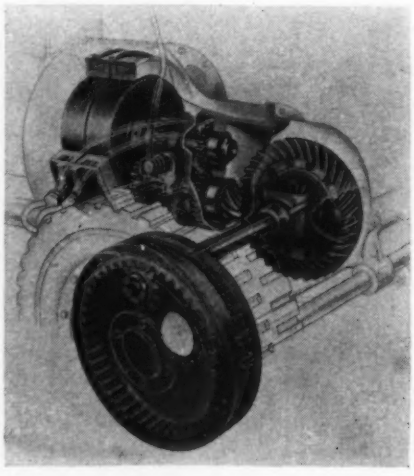
An outstanding advantage of the



Dumpcrete is that it can discharge rapidly or slowly, according to the requirements of the job. Discharge is regulated by the positive cutoff gate and fingertip control of the hydraulic lift. An adjustable baffle aids in re-mixing the concrete, and the 90-degree dumping angle and rounded interior corners insure a clean body upon discharge. The sectional folding chute is 13 ft. long and fully adjustable. This equipment is also available in 2- and 3-cu. yd. capacities.

● Induction Drive

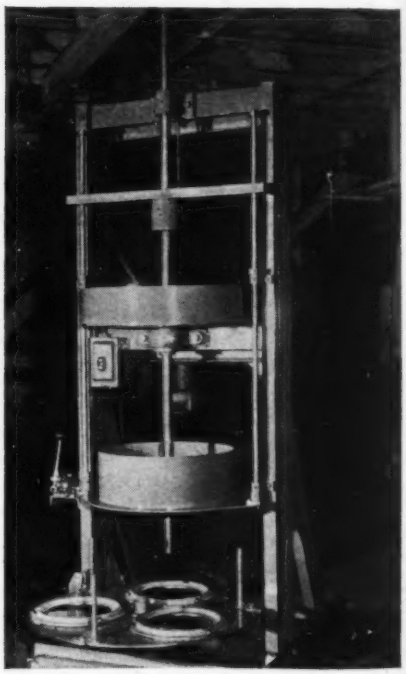
The Clark Equipment Co., Industrial Trucks Division, Battle Creek, Mich., has installed a magnetic induction drive on its gas-powered Utilitruc fork-lift truck of 6,000-lb. capacity. This new transmission system is known as the "Dynatork Drive" and is said to give smooth, quiet and efficient transmission of power.



The power from the truck's engine is transmitted by means of magnetic induction. Two magnetic coils are mounted within the fly-wheel and are surrounded by magnetic poles. They rotate with the flywheel and are the driving members—one coil for forward and the other for reverse. Two rotors attached to a special forward and reverse constant-mesh gear are the driven members. The magnetic inductive force is applied through an air gap and as a result there is no metal-to-metal contact between driving and driven members. This system has eliminated the need for the conventional clutch.

● Tile Maker

The "Tile-Master", designed for high-production high-speed service, is offered by The St. Johns Tool and Die Company of St. Johns, Mich. The machine is



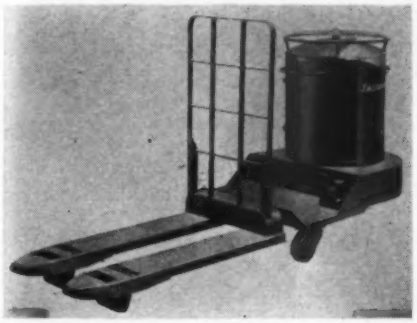
offered in several models for single- or three-phase installations, air operated (A models) or hydraulic (H models). Rugged all-steel construction and adjustable toggle clamps, according to the manufacturer, give perfect fit for joints throughout the life of the mold. Tapered Timken roller bearings in dustproof housing reduce maintenance cost. Other features include the following: high-tensile strength, turned and ground spindle shaft; direct V-belt spindle drive; adjustable traverse speed of packer-head lift; flywheel type V-pulley on spindle, providing extra power for tight-packed tile; choice of hydraulic or compressed air packer-head lift.

● Plant Pallet Truck

Rounding out its line of materials-handling trucks, the Salsbury Corporation, 1161 East Florence Avenue, Los Angeles, Calif., has announced the introduction of its new "Palletruk," designed for use in plants, whose operations are chiefly palletized.

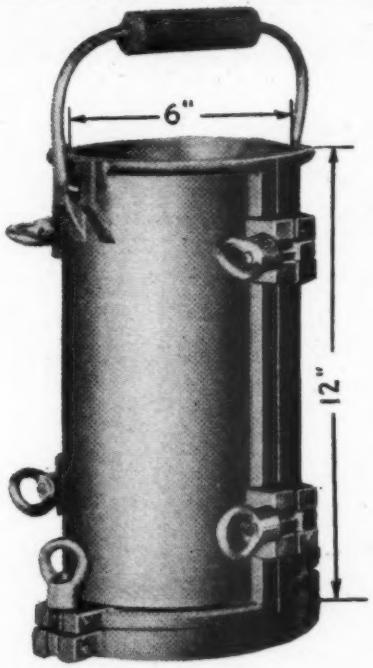
This new truck is equipped with two 9-in. forks, 48 in. long, spaced 9 in.

apart, with tapered forward ends for ease in picking up practically any pallet. A 4-in. lift is provided for ample clearance above the floor. The Palletruk has the



widely spaced four-point suspension that characterizes the Salsbury "Turreteer" or platform model. This truck is also fully articulated to permit handling pallet loads over sharply pitched irregularities in floor levels without danger to load stability.

The Palletruk can negotiate aisles only slightly wider than the pallet being handled and turns in its own length. Powered by the air-cooled Wisconsin engine, it handles loads up to 4,000 lb. even on a 15-deg. ramp. The fully rotatable turret power unit provides complete maneuverability and constant truck motion without the necessity for gear shifting.



● Cylinder Molds

The concrete test cylinder mold shown in the accompanying illustration is the result of the combined efforts of the Moline Iron Works staff and the U. S. Engineers during World War II. The manufacturer states that these molds are accurately machined to precision limits, "producing a cylinder specimen exactly 12 in. in length and 6 in. in diameter". They are made of high-strength refined malleable iron castings, the two halves being bolted together by bronze swing bolts. The machined base plate is mounted in the same manner. Manufactured by the Moline Iron Works, Moline, Ill.

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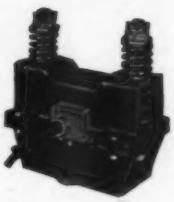

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For hand or power machines.

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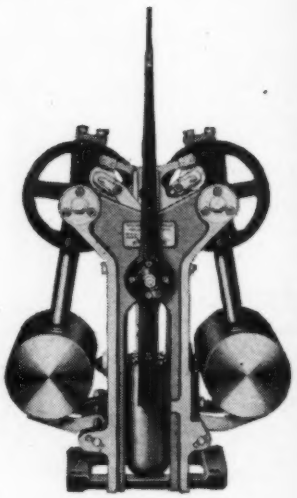

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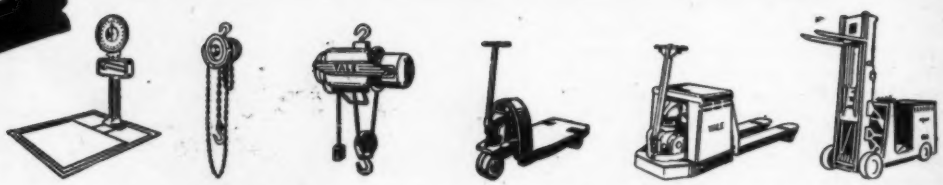

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